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ABSTRACT

This publication discusses the geography of and land use in a specific region of the Netherlands, the region of the great rivers of the Rhine, the Waal, and the Meuse. It is one of a series of publications developed by the Information and Documentation Center for the Geography of the Netherlands (IDG), a nonprofit organization whose aim is to supply information and documentation about the geography of the Netherlands to institutions and bodies outside the Netherlands concerned with education, study, and information, in the widest sense, about that country. There are four major sections. The first section provides a history of and describes the region of the great rivers. This area is generally defined as that part of the Netherlands which is bounded roughly by the towns of Rotterdam and Dordrecht in the west and Arnhem and Nymegen in the east. Discussed are the origin of the landscape, the water quality, land consolidation, rural planning, communications, and national physical planning. A brief discussion of an excursion route is also included. Statistical data on land use and environment, the population, the economy, agricultural holdings, industry, and foreign trade are provided in the second section. The third section contains brief notes on traffic, civil engineering works, and physical planning. The concluding section describes the aims and activities of the IDG. The appendix contains a bibliography and a sheet index to topographical maps. (RM)

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FOREWORD

In this 1980/81 Bulletin a new approach has been adopted in respect of the leading article from that adopted in the issues of the previous five years. In each of the earlier bulletins a general theme was chosen which was relevant to the whole of the Netherlands (the previous themes included landscape, industry, agriculture, water, physical planning, in that order).

In the present bulletin and in the issues of the next few years, regions within the Netherlands will be discussed which lie less at the centre of interest than, for example, the Lake IJssel polders, the Delta region and the Randstad.

The leading article in this issue deals with the region of the great rivers, Rhine, Waal and Meuse, and covers such themes as land consolidation and rural planning, navigation, traffic by land and physical planning. It also includes a brief description of an excursion route.

The chapters Statistics — Brief notes — About the IDG — Bibliography occupy their customary place. *)

As always, the IDG will be pleased to receive your comments on this bulletin and any suggestions for future issues.

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1981

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*) Text concluded on 1st July 1981 (apart from a number of statistics, which were received later).

Erratum — Due to a technical problem, all the British address labels for the 1979/80 issue of the IDG bulletin have been directed to 'England'. We apologize to those of our readers who live in Northern Ireland, Scotland or Wales.



I – THE REGION OF THE GREAT RIVERS

1. Introduction

The region of the great rivers is generally defined as that part of the Netherlands which is bounded roughly by the towns of Rotterdam and Dordrecht in the west and Arnhem and Nijmegen in the east. The most important rivers flowing through the region are the Lower Rhine/Lek, the Waal and the Meuse (= Maas) (fig. 1A and 1B).

The area upon which the great rivers leave their mark is, of course, much larger; it comprises the elongated territories along the Guelders IJssel in Gelderland and Overijssel and along the Meuse in Limburg. The same may be said of the Delta in the South West Netherlands, which partly belongs to the Scheldt basin.

This article, however, restricts itself to the first, narrower, definition, because it is the region which is the most strongly affected by the rivers in its physical geography and socio-economic structure. The interplay of parallel-flowing rivers and their distributaries had very specific consequences for the origins of the soil and landscape. Moreover, since each river formed an obstacle to movement on land, it was the cause of the isolation suffered by the different parts of the region until recently.

Where there is only a single river, such as the Guelders IJssel or the Limburg Meuse, these phenomena are much less marked. In the Delta there is again a system of parallel-flowing waterways, but there the sea plays a much more dominant role (and will continue to do so, despite the carrying out of the Delta works, because the New Waterway and the Western Scheldt will remain wholly open and the Eastern Scheldt partly so).

The region of the great rivers thus defined as bounded by the four cities mentioned above is situated mainly in the provinces of South Holland and Gelderland. In the narrative which follows it will not be treated according to the principles of traditional regional description. Following the approach adopted today in many new school textbook series (stimulated by recent developments in the curriculum of school geography), the article will develop a number of themes which can be illustrated by reference to the region of the great Dutch rivers. Accordingly, the following aspects will be dealt with in turn:

In Section 2 – The manner in which, in a delta zone along the lower courses of rivers, soils and landscape are shaped during a period in which the rivers have not yet been held in check by dikes (for example, the origin of natural levees and basin lands).

– Man's struggle against the flood danger, first by building houses and villages on raised ground, later by constructing dikes along the river and pumping the excess water out of the areas protected by the dikes.

In Section 3 – The importance of the rivers for navigation and trade, and the human intervention needed to adapt the rivers of a lowland not naturally suited to navigation to the needs of an increasingly demanding transport industry: further the problems regarding the quality of the river water.

In Section 4 – The measures which have been carried out in the rural areas between the rivers since about 1950, first with the sole aim of agricultural improvement, later with an attempt to strike a balance between the interests of agriculture, open air recreation and nature conservation: the transition from land consolidation to rural planning.

In Section 5 – The opening up of the region by roads and railways and its integration into physical planning at the national level. It is noteworthy here that the 'buffer position' between the Central and South Netherlands, which was previously forced upon the region because of its isolation, is now deliberately being emphasised in physical planning.

In Section 6, lastly, an excursion route through the region is described which takes in a number of elements illustrating the themes mentioned above.

Modern school geography is distinguished from what preceded it not only by the treatment of themes and concepts instead of regions, but also by the emphasis on processes and development instead of the description of static situations. Here again, the following introduction to the geography of the region of the great Dutch rivers (because of the limited size of this Bulletin we obviously cannot offer more than a preliminary reconnaissance) can supply a number of examples:

- physical geographical processes relating to the genesis of the river landscape;
- changes in the landscape resulting from human intervention, both in respect of the rivers themselves and of the terrain lying between them;
- changes in this human intervention resulting, for example, from technological developments (such as the increasingly heavy demands made by shipping on the rivers as a waterway), from changing attitudes towards the appreciation and importance of the countryside, and from the significance of the region as a whole within the context of national physical planning.

2. Origin of the landscape and struggle against the water

Until well into the Pleistocene period the water of the great rivers flowed northwards to the sea, generally not in permanent channels. As a result large parts of the Netherlands were covered with sand and gravel.

During the penultimate glaciation — the Riss — tongues of the Scandinavian ice sheet penetrated into the Netherlands approximately to the line Haarlem-Nijmegen. The glacial deposits and the preglacial sediments which had been pushed up to form hills (push moraines) forced the rivers Rhine and Meuse to shift their courses into a westerly direction. During the last part of the Pleistocene a lot of coarse sandy material was laid down by these rivers.

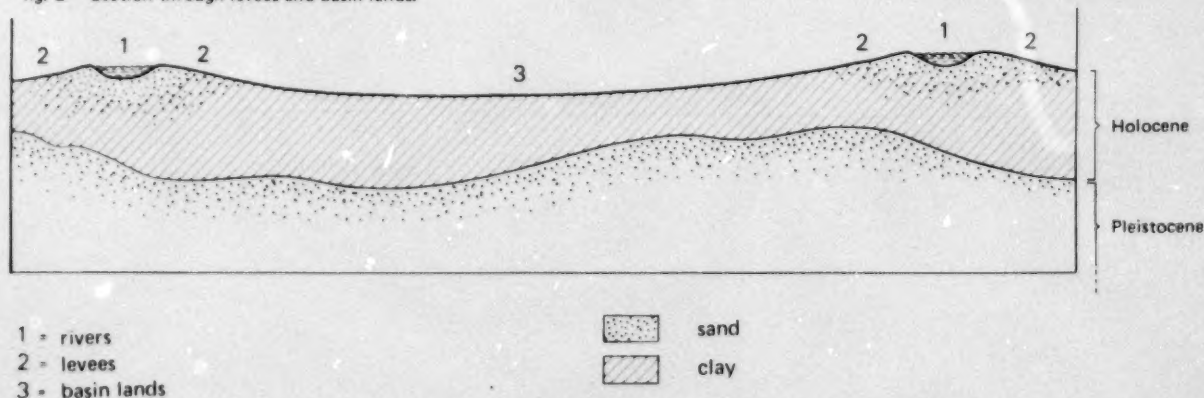
Because the sea level was low during this period, the rivers flowed rapidly and continually changed their courses. The landscape was one of braided rivers in wide flood plains, with many channels, separated by islands of sand and gravel.

When the climate became milder and the sea level rose, the velocity of the rivers decreased and a meandering river pattern evolved. During periods of high water levels, in the winter and spring, the rivers regularly overflowed their banks, depositing the heavier sandy material immediately beside their channels and the finer silt at some distance from the river.

In this way, relatively high sandy *levees* were formed along the rivers and, behind them, low-lying areas in which the finer, clayey material settled — the *basin lands* (fig. 2). This situation developed in the central and eastern parts of the region of the great rivers. In the western part — roughly to the west of Gorinchem — the levees are generally narrower and have a higher clay content. Because of the decline in-flow velocity towards the west, the rivers no longer transported much sand here. In the "basins" between the rivers in this area a large amount of peat was formed.

This process was brought to an end in the Middle Ages through the construction of dikes. The courses of the rivers became fixed and new material was deposited in the backlands only in the event of the dikes being breached.

fig. 2 — Section through levees and basin lands.



Investigations have shown that the first settlement forms in the region date back to about 3000 B.C. People settled in the higher parts — the levees — because these offered the greatest security against the water. As a result of climatic changes, however, there were several episodes of rise (transgression) and fall (regression) in sea level, which caused fluctuations in the boundary between land and sea. Up to the Middle Ages this process determined the population density of the region. In the earlier Middle Ages the region of the great rivers was relatively densely populated.

After initially building only their houses on artificial mounds, the inhabitants tried later to protect whole villages with their surrounding farmland against the water. The villages were built on the relatively higher levees close to the river. Each village tried to protect itself by means of a dam system, consisting of side dike (*zijwende*) and rear dike (*achterkade*) (see fig. 3). In the event of flood the water was directed by these dams round

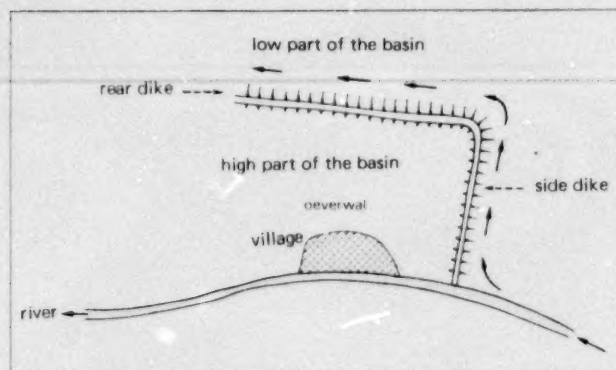


fig. 3 — Protection against floods in earlier times.

the village and its fields to the lower-lying parts of the basin land. In this way each village had its own drainage system. Between about 1000 and 1400 dikes were gradually built along all the rivers, thus fixing the rivers in their courses and considerably reducing the flood danger.

Nevertheless, flooding continued to occur regularly until the present century. Therefore dikes were built not only *along* the rivers, but also in a north-south direction, from river to river, in order to hold back the water from the east in times of flood. A well-known example is the Diefdijk west of Culemborg, between the Lek and the Linge (see fig. 5B, p.12). The construction of such a dike obviously had

more favourable consequences for the areas to the west of it than to the east.

Another emergency measure was the construction of a spillway (*overlaat*). Threateningly high water was allowed to flow over a low section of the river dike into certain thinly populated areas in the hope of sparing other areas from flooding. A well-known example was the Beerse Overlaat along the Meuse where until 1942 an area in the north east of the province of North Brabant was regularly set under water. (see fig. 5A, p. 12).

Because of the existence of a central authority, large drainage canals (*weteringen*) could be dug at the beginning of the 14th century in the lower parts of the basinlands, to which each village polder could discharge its water. The lower parts of the basins, which had previously lain under water for a good part of the year, could then be brought under cultivation.

These works gave the river clay the appearance which it has retained up to the present time. The landscape has been changed through the centuries only through the introduction of new forms of pumping and improvements to the rivers. The old parcel shapes still survive. They are squarish in the higher areas and take the form of strips in the lower, wetter parts, where they extend back from the drainage canals. The once regularly occurring flooding determined the nature of the soils and thereby, their suitability for arable farming, livestock farming, or horticulture, which have always been the most important forms of subsistence.

Embanking of the rivers often took the form of a double system of dikes (fig. 4 and photo I). Immediately along the river are the low *summer dikes* and, at some distance behind them, the high *winter dikes*. Between the summer dike and winter dike on both sides of the river are the washlands (*uiterwaarden*) — strips of land which are inundated at times of high water levels. During the summer these washlands can be used for pasture or as hay meadows. Since the building of the dikes river clay has been deposited only between the dikes, giving rise in many places to deposits of clay several metres in thickness. The clay is dug for brick making (see fig. 4). Where the clay has been removed to a great depth extensive water-filled pits are created.

After the flood disaster of 1953 it was decided to increase the security not only in the coastal areas, but also along the rivers. The river dikes were reinforced, which means that they were raised and generally also made broader. It was decided to guarantee a level of safety such that a water discharge with a chance of being exceeded once in 1250 years would not give rise to any problems. Rigorous dike reinforcement also means, however, an impoverishment of the landscape. Trees and picturesque farms built against the dike frequently have to be removed. There are often strong protests against these dike reinforcement schemes from nature and landscape protection societies.

3. Rivers and navigation

The rivers have long been of great importance for navigation. They form the link between the North Sea and the hinterland in Germany, Belgium, France and beyond. Towns like Dordrecht, Arnhem and Nijmegen owe their prosperity to the river traffic. Other, now smaller towns, such as Zaltbommel, Culemborg, Tiel and Gorinchem, declined in importance when the port activities shifted towards the sea.

Since about 1750 a large number of works have been carried out to improve the functioning of the rivers, both for navigation and water discharge. This has resulted in great changes to the map of the region of the great rivers. Figure 5 gives an impression of this through a comparison of the present situation with that of about 1750.

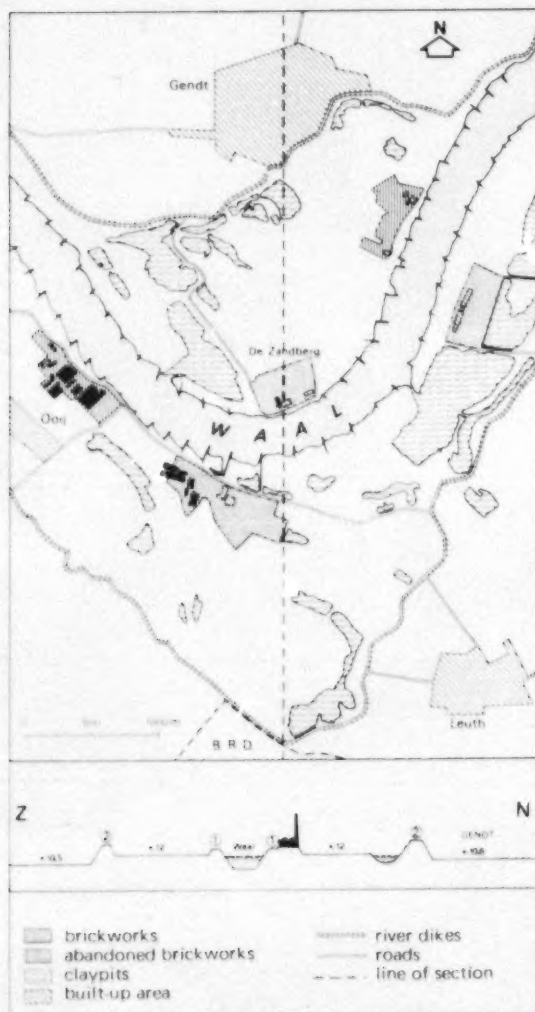


fig. 4 - The Waal east of Nijmegen with dikes and washlands.

At first it was difficult to carry out radical changes, not only because of inadequate techniques, but also because of political complications. Until the end of the 18th century the region formed part of different, largely independent provinces (the Seven United Provinces), which found great difficulty in co-operating with each other. Moreover, the area around the bifurcations of the Rhine, Waal and IJssel belonged to the Duchy of Cleves, which later formed part of Prussia. During the course of the 19th century the political situation improved, one reason being that, from 1815, the whole area around the bifurcations of the Rhine became Dutch territory. In addition, various international agreements were made, including the abolition of the tolls along the rivers, regulations about the width and depth of the rivers and the height of bridges, and traffic rules. The most important of these agreements was the Act of Mannheim of 1865.

At the bifurcations of the Rhine, Waal and IJssel the natural distribution of the water was such that the Waal discharged 90 to 95% of the Rhine water, leaving a meagre 5 to 10% for the Rhine and IJssel. *)

(see Note page 11).



photograph 1 -- Road bridge over the Waal at Ewijk, ten kilometres N.W. of Nijmegen. Clearly visible in the foreground are the summer dike (I), washlands (II) and winter dike (III).

A natural consequence was that the Waal often caused floods, particularly at points where it could connect with the Meuse (e.g. at Heerwaarden, see fig. 5A), while the Rhine and IJssel sometimes almost dried out in the summer. By digging two canals — the Pannerden and Bijland canals (1 and 2 on fig. 5B) — the bifurcation of the Rhine and Waal was shifted several kilometres downstream and stabilised. As a result of the construction of dams in the river bifurcations towards the end of the 18th century, the situation was such that the Waal discharged $\frac{2}{3}$ of the Rhine water, the Rhine $\frac{2}{9}$ and the IJssel $\frac{1}{9}$. This is still the situation today, except that the distribution between the Rhine and IJssel can be temporarily adjusted if necessary, thanks to the construction of weirs in the Lower Rhine.

During later periods more improvements were made to the Rhine/Waal/IJssel river system, such as:

- the straightening of a number of bends; this is an important and often applied measure up to the present day. Not only does it create a shorter navigation route, but it also increases the velocity and thereby the capacity of the river;
- the digging of the Nieuwe Merwede — completed in 1869 (3 on fig. 5B) — which allowed the water of the Waal to reach the sea by means of broad channels such as the Hollands Diep and the Haringvliet (fig. 1);

* In a delta the greatest quantity of water always chooses the shortest route to the sea, since this route always has the steepest gradient. Because of changes in the coastline brought about by flooding, the shortest route in the Rhine delta was not always the same one. During the Roman period it was the Kromme Rijn/Oude Rijn. Because of the formation of the Zuyder Zee the Guelders IJssel became the most important branch of the Rhine during the Middle Ages but afterwards a combination of factors led to the present situation with the Waal being the shortest route to the sea.

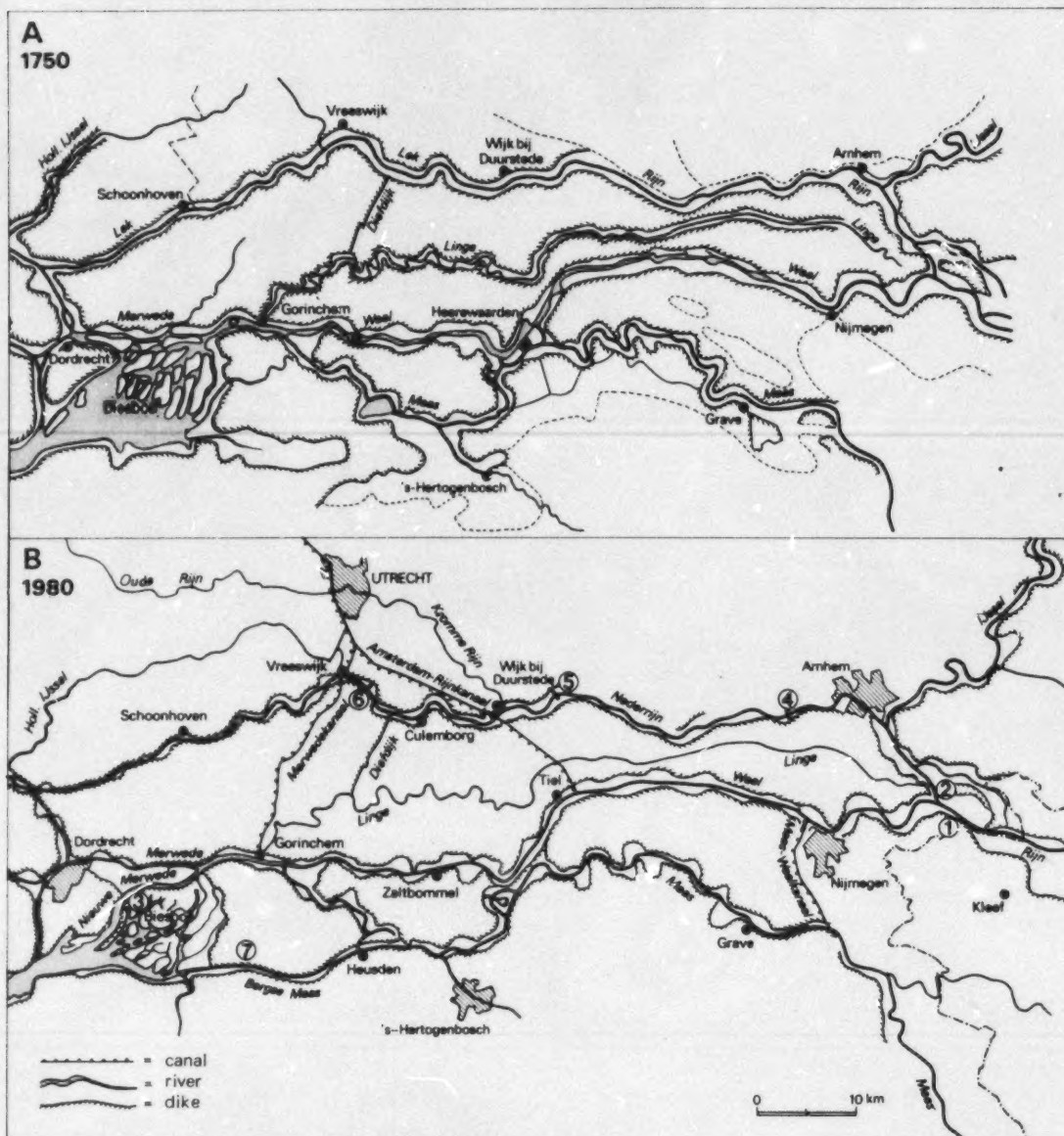
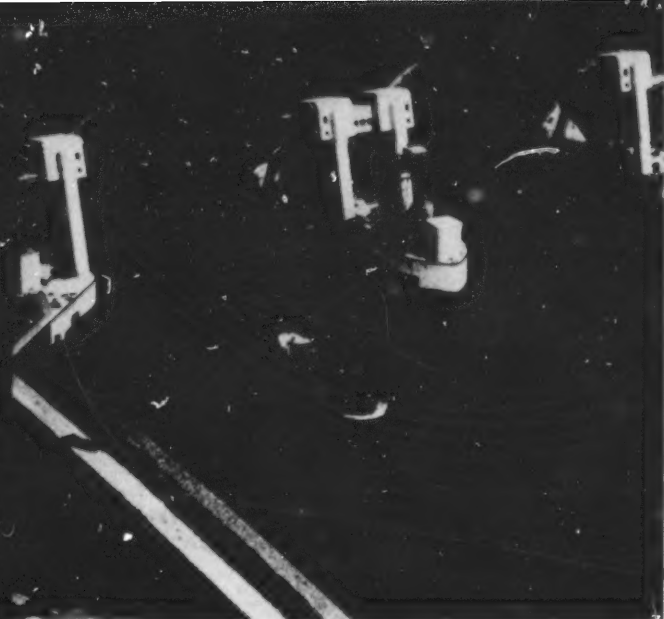


fig. 5 - The region of the great rivers around 1750 and 1980.

- the construction of three weirs in the Rhine (4, 5 and 6 on fig. 5B) between the years 1958 and 1970. A completely new construction method was employed for these: the water can be held back by two semi-circular movable "visor gates", while shipping can pass through unimpeded when the gates are raised (see photographs IIA and B). The most easterly of these weirs (4 on fig. 5B) enables more water to be diverted to Lake IJssel via the Guelders IJssel, to the benefit of agriculture in the North and East Netherlands. Without further measures, however, the water discharge via the Lek to the sea would be so diminished that navigation along it would no longer be possible. Moreover, the salt water, which already penetrates inland beyond Rotterdam at high tide, would be able to penetrate still further. In order to combat the first evil two further weirs were built downstream in the Lower Rhine and Lek (5 and 6). *)

*) for a more detailed description of the weir at Amerongen (5) and the nearby crossing of the Lek and the Amsterdam-Rhine Canal, see the IDG Bulletin for 1978-79, pp. 22-25.



photograph II — Weir in the Lek at Hagastein, twelve kilometres S. of Utrecht (cf. fig. 5B). Left: gates opened, right: gates closed.

In order to combat salt penetration it is important that, because of the sealing off of the northern Delta waters, the water of the Meuse and Waal is forced to flow past Rotterdam to the sea. This is ensured particularly by the dams in the Volkerak and Haringvliet (see fig. 1, p. 6). In order to prevent flooding in the Rotterdam area, for example, during periods of high water on the great rivers, seventeen discharge sluices have been provided in the Haringvliet Dam.



photograph III — Cutting off of bends in the Meuse near Gennep in the north of the province of Limburg (looking N.).

The Meuse has also undergone radical changes in the course of time. Because the Meuse, in contrast to the Rhine, is purely a rainfed river, the major problem here was the irregularity of the regime. An excess of water in the winter and too little in the summer was an annually recurring pattern. As a result of the building of a series of weirs — mainly in the province of Limburg — the water level has been made more regular.

As already described above, the Meuse often caused flooding downstream, particularly in the north of the province of North Brabant. Figure 5A shows these areas, outlined by a dotted line. The situation was improved here by:

- cutting off a large number of bends, especially in the area between Grave and Heusden (photo III); the remarkably winding course of the dikes (see fig. 5B) still perpetuates the course of the former meanders;
- the digging of the Bergse Maas (completed 1904; 7 on fig. 5B), which also enables the Meuse to discharge its water rapidly to the Hollands Diep and no longer as previously into the Waal near Gorinchem;
- the closing and raising of the dikes along the left bank of the river, in other words, the discontinuance of the use of the spillways.

In addition to the specific measures already described in respect of certain rivers, works have been carried out nearly everywhere in the great rivers to maintain the condition of the river channel within the summer dikes.



photograph IV — The Waal at Brakel, seven kilometres east of Gorinchem (looking W.). Groyne are built out into the river on both sides. On the river are three push trains, one of which comprises two berges, while two consist of four berges each.

This is referred to as "normalisation" and consists mainly of dredging the navigation channel and building groynes — small jetties, faced with basalt or asphalt, generally in the outer bend of a river at right angles to the bank (photo IV) — with the aim of narrowing the navigation channel. The water flows more rapidly and the depth of the river is more readily maintained.

Present-day bulk transport, such as of iron ore from Europort to the industrial region of Westphalia, makes high demands on the river as a shipping route. For this increasing use is being made of push trains, generally consisting of four containers with a push propulsion unit (photo IV).

In order to reduce transport costs still more, consideration is now being given to the use of six container trains. The Dutch government has calculated, however, that 250 million guilders would have to be invested in infrastructure works to accommodate these. The rapid growth in the importance of push propulsion — particularly in transport to Germany — appears from the figures below, which illustrate the trends in goods transport at Lobith (i.e. above the bifurcation of the Rhine and Waal) over a number of years (Table 1).

Table 1 — Goods traffic on the Rhine passing Lobith in millions of tonnes

	1965	1970	1979
<i>Upstream:</i>			
cereals	2,7	2,9	2,1
ores	21,9	31,4	37,7
solid fuels	4,4	3,4	3,1
liquid fuels	8,0	12,0	19,3
other goods	15,5	18,8	23,5
Total	52,5	68,5	85,7
of which push propelled	6,8	16,4	36,9
<i>downstream</i>			
fertilisers	3,0	2,3	2,3
sand, gravel etc.	8,7	18,3	19,3
solid fuels	3,5	6,6	6,1
metals	5,1	5,8	6,6
other goods	7,9	10,8	13,3
Total	28,2	43,8	47,6
of which, push propelled	0,9	4,5	7,3

Mention must be made, lastly, of a number of canals dug in the 19th and 20th centuries and linking the major rivers. The most important are — in chronological order — (see fig. 5B):

— the Merwede Canal (Utrecht-Vreeswijk-Gorinchem), 1892;

— the Meuse-Waal Canal (near Nijmegen) 1929;

— the Amsterdam-Rhine Canal (Utrecht-Tiel) 1952.

Water quality

A quite separate aspect of river management which has given rise to increasing problems particularly in recent decades, is the maintenance of good water quality in the rivers.

Two conflicting developments lie at the basis of the problems:

- the greatly swollen cities along the rivers — both in the Netherlands and beyond — and the equally swollen number of industries are causing an increasingly serious pollution of the rivers. This pollution is experienced at its worst along the lower reaches of the rivers, i.e. in the Netherlands.
- the Netherlands has to turn increasingly to surface water for its domestic and industrial water supply, since there is little margin for increased use of groundwater, because of the dangers of lowering the water table and increase in salinity. The greater part of the surface water comes from the Rhine, Europe's most polluted major river.

The necessary measures lie in two spheres:

- International: aim at making agreements to reduce pollution. After a hesitant beginning the hope of achieving speedy results, particularly as far as the Rhine is concerned, is not very great at present.
- National: measures to diminish the pollution and to reduce the use of highly polluted river water. The construction of storage reservoirs plays an important part here. They can be used to store water during periods of high water levels, i.e. when the degree of pollution is relatively low (photo V). In addition, where possible, use is being made of water from less highly polluted rivers, such as the Meuse (table 2).



photograph V – Part of the Biesbos with water supply reservoirs (looking NNW). In the foreground the Amar, which links the Bergse Maas and the Hollands Diep, showing the village of Drimmelen with a yacht marina.

Table 2 – Concentrations of certain substances in the Rhine and Meuse (annual averages)

	unit	Rhine at Lobith			Meuse at Lith		
		1977	1978	1979	1977	1978	1979
Oxygen content	mg/l	7,0	7,6	7,9	9,7	9,9	10,3
Phosphate content	mg/l	0,8	0,7	0,7	0,6	0,6	0,6
Nitrogen content	mg/l	2,4	2,1	2,1	2,1	1,8	1,5
Chloride content	mg/l	172	162	167	56	56	50

Source: Rijkswaterstaat (Waterways Dept.)/CBS.

4. Land Consolidation and Rural Planning

Mainly as a consequence of the natural pattern of *levees* and *basin lands* described in Section 2 (fig. 6), there have long been important differences in agricultural land use in the region of the great rivers. Because of their higher situation, low silt content, the deposition of lime and their better cultivability, the levees provide the most suitable land for arable farming, fruit growing (orchards) and horticulture. As a result of their situation, the inadequate drainage and the high silt content, the agriculture use value of the basin clay lands was much more limited. They were used mainly for grazing and the growing of osiers (photo VI; the osier wood is used mainly in the construction of water defence works).

The productivity of the pastures and hay meadows is low. The situation of farms, roads and villages is also determined by the pattern of levees and basin lands. They are situated mainly on the relatively higher lying levees, where the land is intensively used. Because of inheritance the land here ultimately became fragmented into very narrow strips (photo VII).

The landscape of the basin lands is on a much larger scale, with extensive pastures and osier lands and very few buildings. The basin lands were also until recently very difficult of access, with mostly unmade roads, which became completely impassable in winter. Because of all this

large parts of the region of the great rivers were unsuitable for the intensification of agriculture into the present century. Consequently, during the period 1860-1940, a high proportion of the young people had to leave the region.

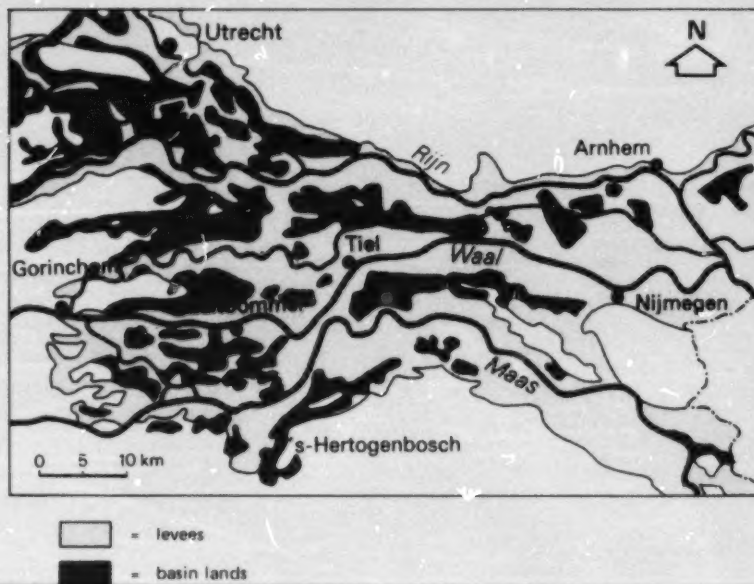
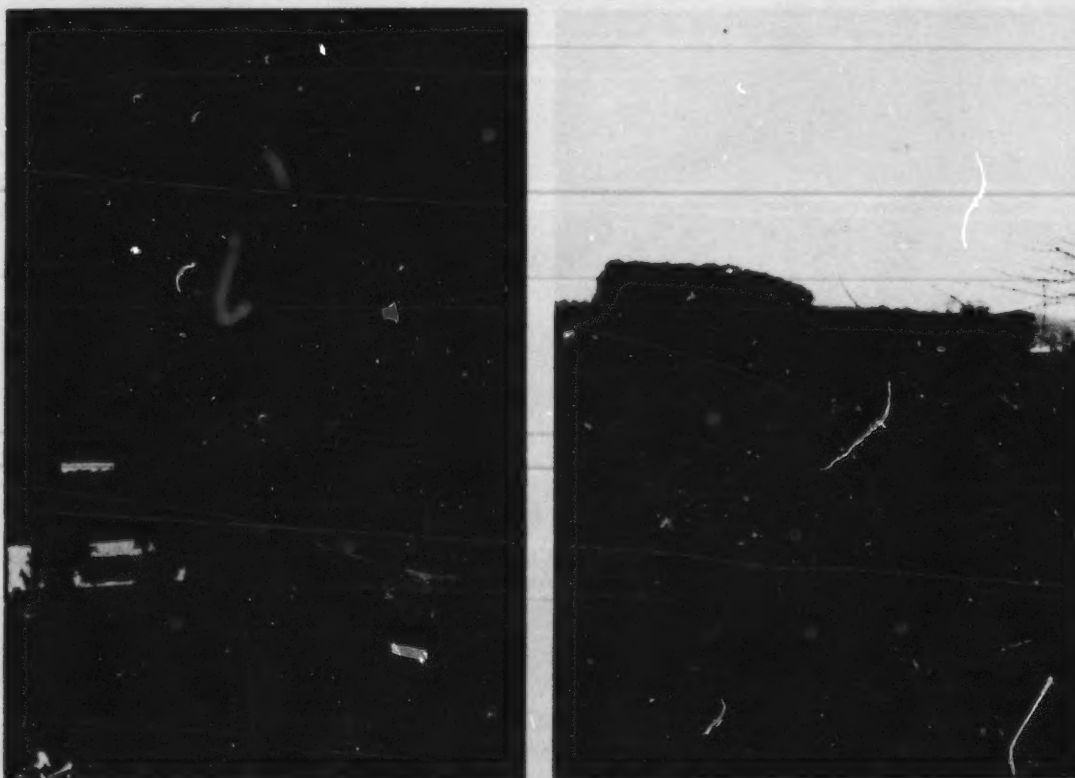


fig. 6 - Levees and basin lands in the region of the great rivers.



photograph VI - Landscapes in the region of the great rivers. Left, on a levee along the Lower Rhine, the village of Rijswijk in the Betuwe; right, a basin area with osier beds in the background and a quantity of freshly cut osiers in the right foreground.

The situation sketched above, further aggravated by the depression in agriculture, resulted in a relative backwardness economically, socially and culturally.

In an attempt to remedy this backwardness, plans were launched in about 1950 for a radical improvement of the situation in the region of the great rivers. Although it is less well-known, because less spectacular than the Zuyder Zee works or Delta Plan, this is again a large-scale project, which has very far-reaching consequences for man and environment in the region concerned.

In broad outline the plans may be characterised as follows:

- an improvement of the situation in the basin lands (soils, water economy, infra-structure, see fig. 7);
- a reallocation of the agricultural land;
- a reshaping of the landscape.

Within this context many farms are being relocated from the levees along the rivers to the basin lands.

The works were and are being carried out largely within the framework of the Land Consolidation Act. The first Dutch law in this field dates from 1924 and it laid down, among other things, that all the costs of any land consolidation schemes should be borne by the landowners themselves. There was no great enthusiasm for this and the situation was changed by the second Land Consolidation Act, dating from 1938. At present, the third act, passed in 1954, is still in force. This act is wider in scope.

Besides measures related to the reallocation of parcels, it covers provision of access to the land, water management, enlargement of scale, termination of holdings, relocation of farms, provision of utilities, and landscaping.



photograph VII — Farmland fragmented into narrow strips in the Land of Maas and Waal, before the land consolidation scheme.

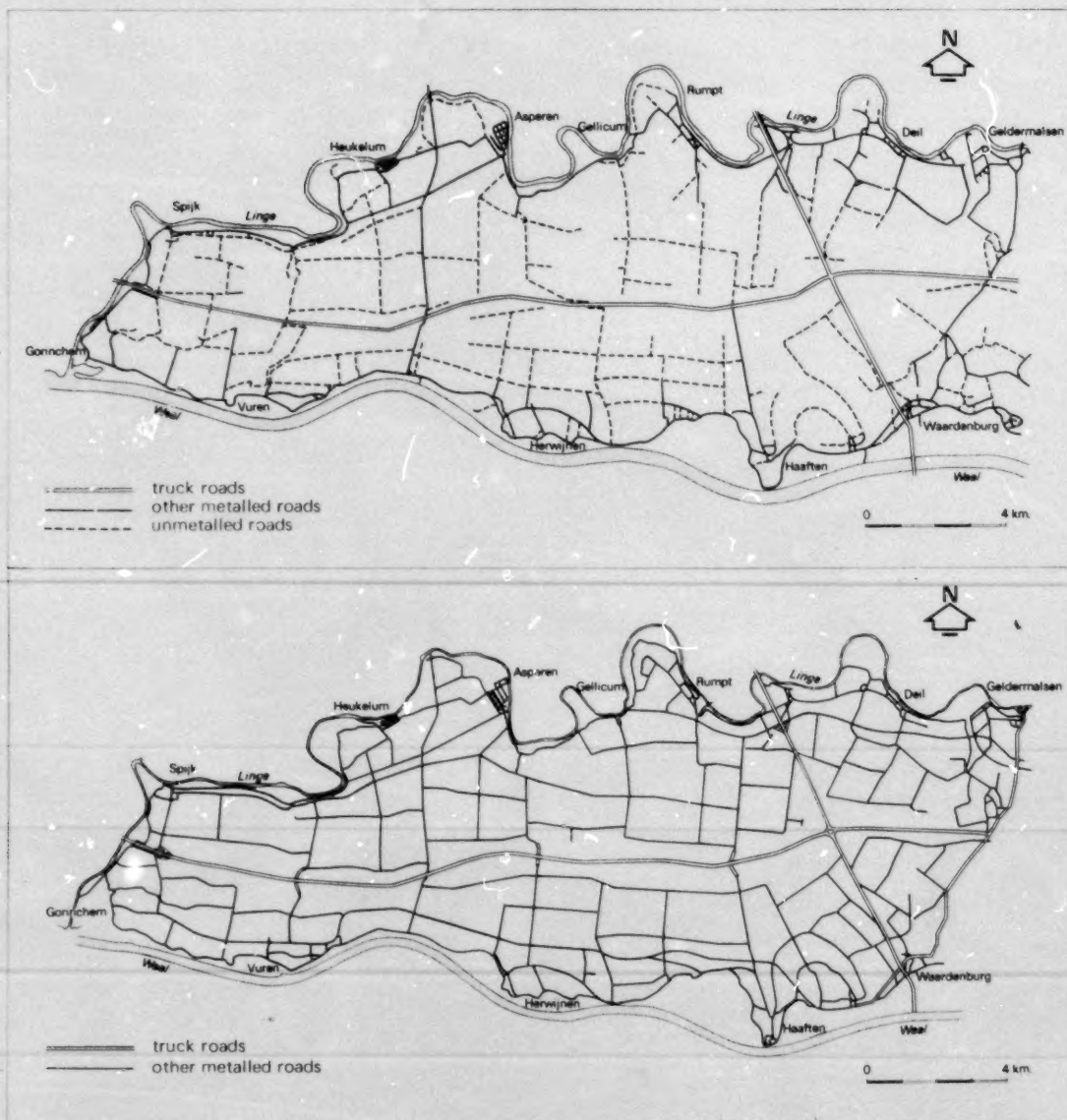


fig. 7 — Road network in the Tielerwaard before and after the land consolidation scheme.

Land consolidation projects now often cover areas of thousands of hectares. The 1954 Act contains clearer rules than previously for procedure, public participation and financing.

Because of a further development of ideas about the significance of the rural areas, with more attention being paid to such matters as open air recreation and nature conservation, the 1954 Act is also no longer regarded as adequate. It is no longer a question only of improving the agricultural conditions; the non-agricultural use of the countryside is becoming increasingly significant (cf. for example, the Report on the Rural Areas, Part 3 of the Third Report on Physical Planning in the Netherlands). Consequently, reference is made nowadays to rural planning (or replanning) instead of land consolidation. Instead of aiming only at an improvement in the economic viability of agriculture, there is now the much broader aim of increasing the prosperity and well-being of all the inhabitants of the areas concerned. A new law, which does greater justice to these new concepts, is in an advanced stage of preparation. Among other things, it meets an increasingly felt objection to a section in the 1954 act, which lays down that no more than 5% of the land (in money value) in a land consolidation project may be used for non-agricultural purposes. Particularly in areas with strong claims from the side of nature conservation and open air recreation this figure of 5% is too meagre.

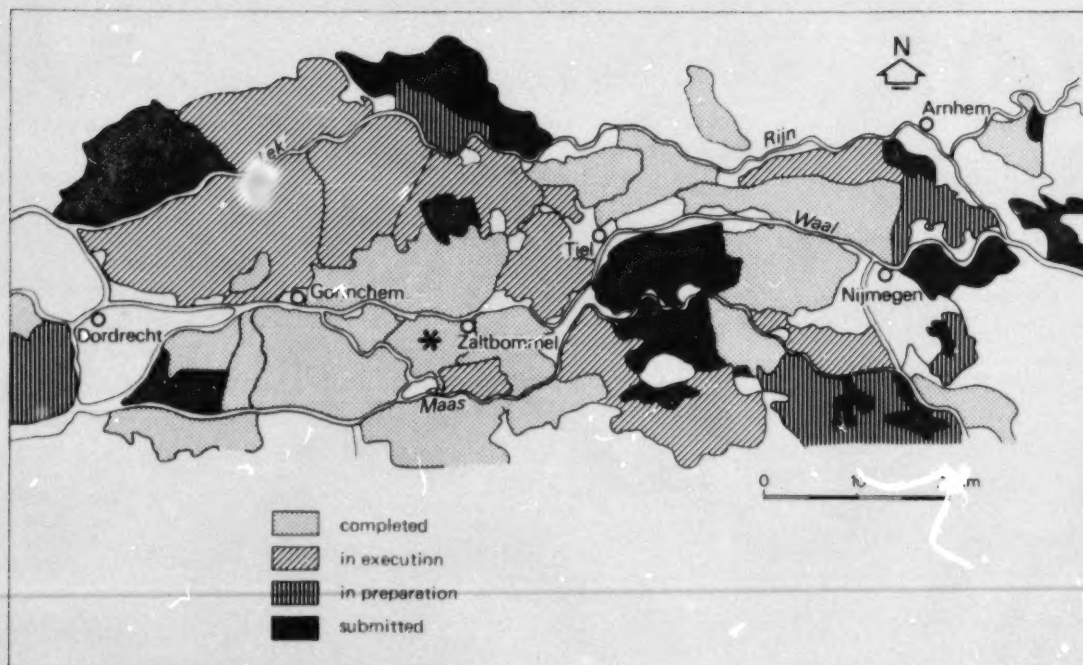


fig. 8 – State of land consolidation schemes in the region of the great rivers at 31st Dec. 1980.

In more than half of the region of the great rivers land consolidation schemes have meanwhile been carried out. In nearly all the remaining parts of the region schemes are in preparation or execution, or have been submitted under the act (fig. 8). In order to preserve something of the former situation, an untouched portion of the old landscape south west of Geldermalsen has been designated as a "basin lands reserve" (see fig. 14). Here is also to be found a duck decoy managed by the State Forestry Service.

The procedure of applying for and carrying out a land consolidation scheme will be described below with reference to the area of Bommelerwaard-West (* on fig. 8). The land consolidation here was carried out between 1959 (year of application) and 1976, that is, so recently that it is already an example more of rural replanning than of a land consolidation scheme limited to the purely agricultural aspects.

Bommelerwaard-West *)

Introduction

The name of this polder district is derived from the place name Zaltbommel and from the term "waard" (= an area of low-lying land surrounded by water). The area of the Bommelerwaard-West land consolidation block is 4430 hectares. The soils have been formed by the rivers Meuse and Waal; along the rivers are situated the river ridge and levee lands, while a river ridge also runs through the middle of the district. These soils are generally suitable for horticulture and fruit growing.

The low lying central area consists of basin clay soil and is used mainly as grassland. 46% of the land in Bommelerwaard-West consists of basin land, 28% of river ridge land, 11% of levee land and 15% of washland.

*) Extensive use was made for this text of the booklet "Herinrichting van het Rivierengebied (Replanning of the Region of the Great Rivers) compiled in 1976 by the Cultuurtechnische Dienst (Government Service for Land and Water Use) of the Ministry of Agriculture and Fisheries in collaboration with the department of Social Geography for Education and Information Transfer (SGOI) of the Geographical Institute of the State University of Utrecht (the name of both institutions has meanwhile been changed: the Cultuurtechnische Dienst is now called Landinrichtingsdienst and the SGOI has been transformed into the Work Group of Geography for Education).

The situation before the land consolidation scheme

Water management formed a source of difficulties. Although the pumping capacity was adequate, the control of levels in the ditches, with the associated groundwater tables, left much to be desired. The dimensions of the channels were much too small for the discharge of excess water.

On the higher lands, in the near vicinity of the villages, there was a reasonably dense road network although much of it consisted of gravel roads, which required a lot of maintenance and were not able to stand up to modern motor traffic and the greatly increased mechanised farm traffic.

With the exception of a single east-west district road, the central part of the area was very badly served by roads. The metalled roads following the winding river dikes linked the river villages together.

The gravel and unmetalled roads in the basins were nearly impassable in periods of heavy rainfall. Many parcels could be reached only by crossing the land of other owners, making use of the "right of easement". Altogether, accessibility was very deficient, which meant that the grassland could not be used and cared for to the best of its capacity.

The average size of holding was 7.7 hectares and on average there were more than six parcels per holding, often widely separated (this again was a consequence of inheritance). In the block as a whole mixed farming predominated. 67% of those who practised agriculture or horticulture as their principal occupation, ran a mixed holding with horticulture and/or fruit farming beside pasture or arable land. 19% had a horticultural holding, 2% a fruit holding and only 12% an arable holding. As far as parcel shape was concerned, the situation in the basin lands was reasonable, but in the fringe areas (where the land is better) it was much worse. Farming was hampered here mainly by the extreme narrowness of the parcels (usually 20 to 30 metres).

Because of the concentration of settlement on the river ridge and level lands, the distance between the farm buildings and the parcels was often considerable. The average distance which had to be covered between farmstead and parcel was 1150 m. for arable and horticultural holdings, 1600 m. for fruit holdings and 1900 m. for grassland. The arable land was in general intensively used. The grassland however, was not at all intensively used. On average only 68 milch cows were kept per 100 ha. of grassland, while 150 cows per 100 ha. would be the minimum for a reasonable economic return. The reasons for this were the poor communications and the poor quality of the grass.

Because of increased mechanisation, the number of hired workers declined by 75% during the period 1947-1960, while the number of family members working on the farm fell by 50%. The number of self-employed remained about the same.

Because of insufficient employment within the Waard, commuting to elsewhere (particularly 's-Hertogenbosch and Rotterdam) increased.

Land consolidation procedure

The application for a land consolidation scheme was submitted in 1959 by the boards of the Gelderland Agricultural Society and the Gelderland Protestant Farmers' and Market Gardeners' Union. There was a great need for land improvement in the area. The major obstacles were the inadequate water management, the poor communications and the high degree of scattering of the farm parcels.

A provisional plan was drawn up in 1964 and voted on by the landowners in 1966. It was approved by a large majority: only 71 of the 2982 owners voted against. *)

The land consolidation works

The water economy was greatly improved by the digging of new watercourses and the widening of existing ones (94 km). The construction of 32 small sluices has helped to improve the control of water levels.

*) It should be noted here that under the 1954 act, all owners not present are presumed to have voted in favour of the plan. This rather unsatisfactory provision is omitted from the new rural planning act.

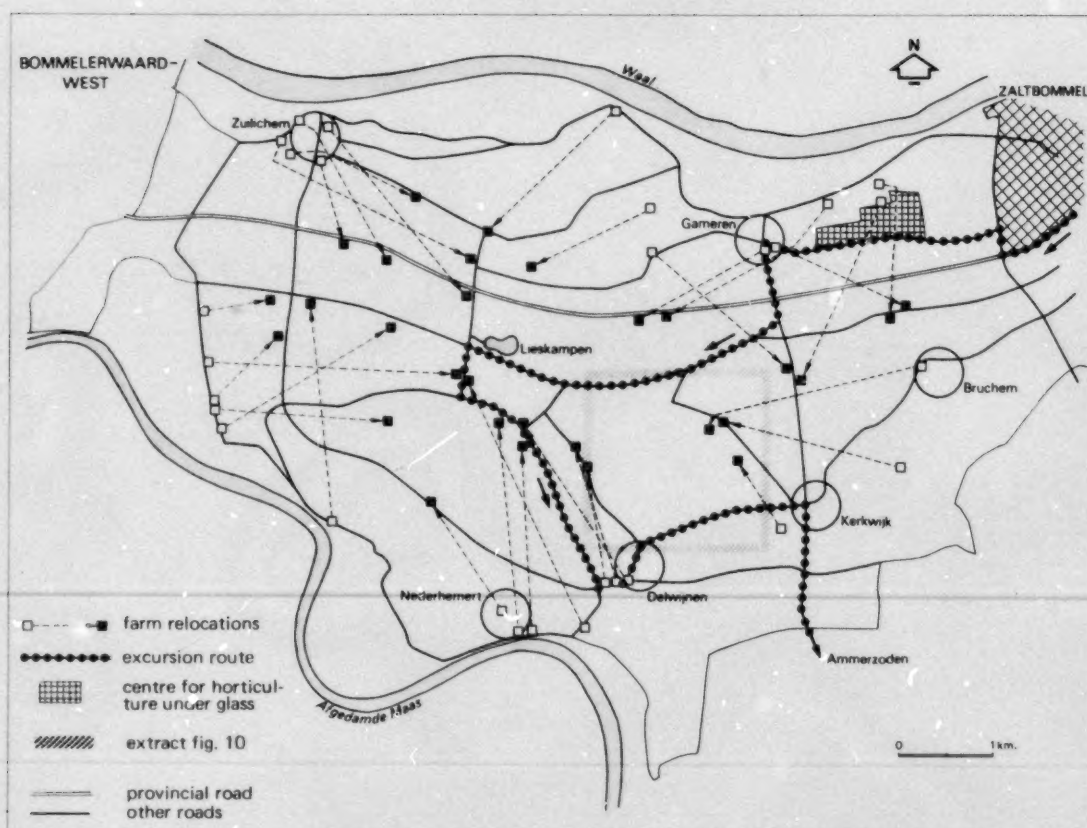


fig. 9 - Bommelerwaard-West.

A better network of local roads has been achieved through the construction and improvement of 44 km of third class roads. Accessibility in the basin lands is now such that every parcel is served by a road.

Through drainage, levelling and resowing a large area of useful grassland has been created in the basin clay zone. 29 farms, which were originally situated in the villages or on the dikes and were mostly obsolete, have been relocated in this zone (fig. 9 and photo VIII). These formerly mixed holdings with an area of 12 to 13 ha. have been transformed into purely dairy holdings with an average area of 25 ha. They have all been allocated the land surrounding the farmstead. *)

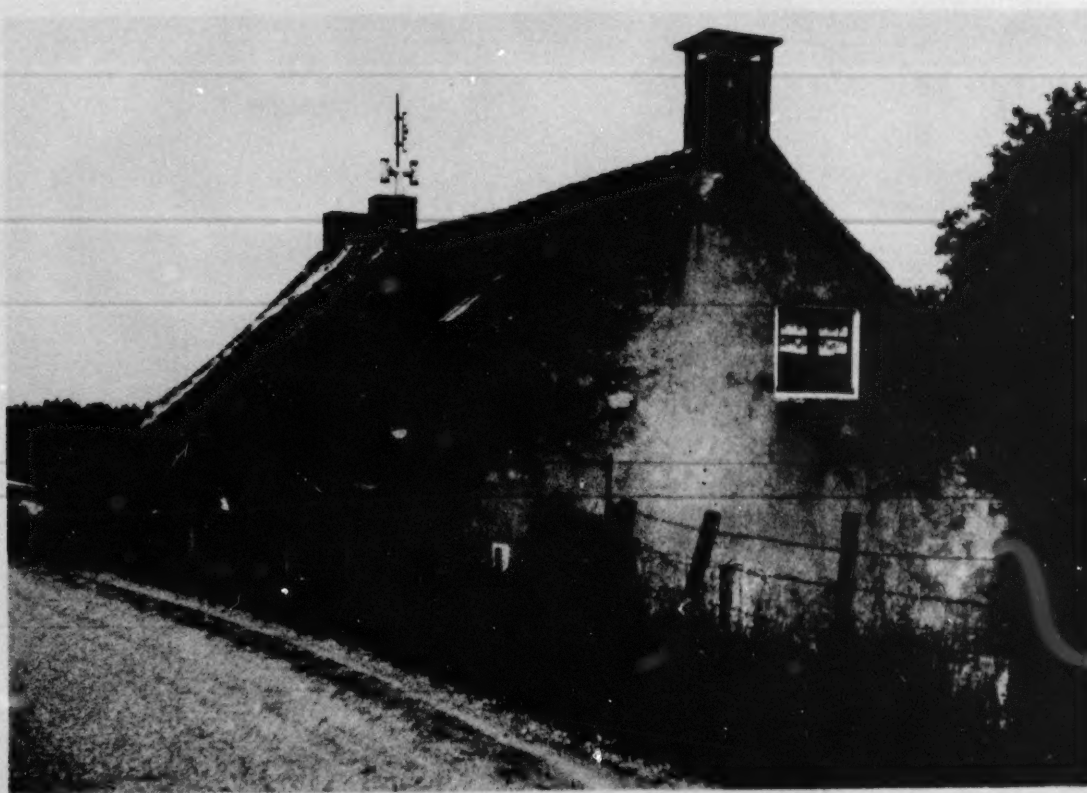
During the land consolidation mixed holdings could specialise in horticulture (partly under glass) or fruit growing by giving up land which was surplus or unsuitable for the new type of farming. Three glasshouse complexes have been established, containing holdings with an area of 1.2 to 1.5 ha. The main crops are strawberries, tomatoes, freesias and chrysanthemums.

The aim of the landscape plan was to preserve valuable landscape elements and, where possible, add new elements to the landscape (e.g. tree planting round the farmsteads).

Existing areas of natural landscape have been safeguarded and partly extended, such as certain osier and poplar complexes. Altogether some 12,000 trees and 395,000 shrubs have been planted.

In determining the forms of open air recreation to be developed in the Bommelerwaard, the character of the area was taken into account and a choice made for quiet forms of recreation, such as fishing, walking, horse-riding etc. Important facilities have been created for fishing and horse-riding in particular.

*) See as an example the description of Mr. J. Slegh's farm ("Livestock Farming in the Restructured River Landscape") in the IDG Bulletin for 1977-78, pp. 15-18.



photograph VIII — New farmstead of a relocated holding in the Bommelerwaard (above). Old farmhouse built against the river dike (below).

In the part of the area with the most attractive landscape an area of water for fishing of about 15 ha. with a shoreline of about 16 km. has been created by deepening and widening existing watercourses and digging a number of interconnected ponds. Riding stables have been opened by private enterprise and a number of old roads are in use as bridleways.

When all the works were completed at the beginning of 1975, a start was made with the drawing up of a definitive plan for the allocation of the land and this was laid open for inspection in April of that year. In November 1976 the allocation of the land was certified by a notary and the land consolidation completed.

The costs of carrying out the whole land consolidation scheme amounted to 25 million guilders. After deduction of the subsidy from the Ministry of Agriculture and Fisheries and contributions by third parties, the land-owners concerned will still have to raise a sum of about 8 million guilders. This is apportioned according to the benefit which the scheme has produced for each owner.

Conclusion

As a result of the land consolidation scheme, the total area of farmland in the district has been slightly reduced. This is because of the setting aside of some areas for nature reserves and recreational use. There was a small shift from arable land to grassland. The number of cattle has more than doubled, as has the number of cows per hectare of grassland. In the central basin lands, where there were previously almost no dwellings, there is now a number of reasonably large and up-to-date farms (fig. 10 and photo IX). The number of glasshouse holdings has been increased.

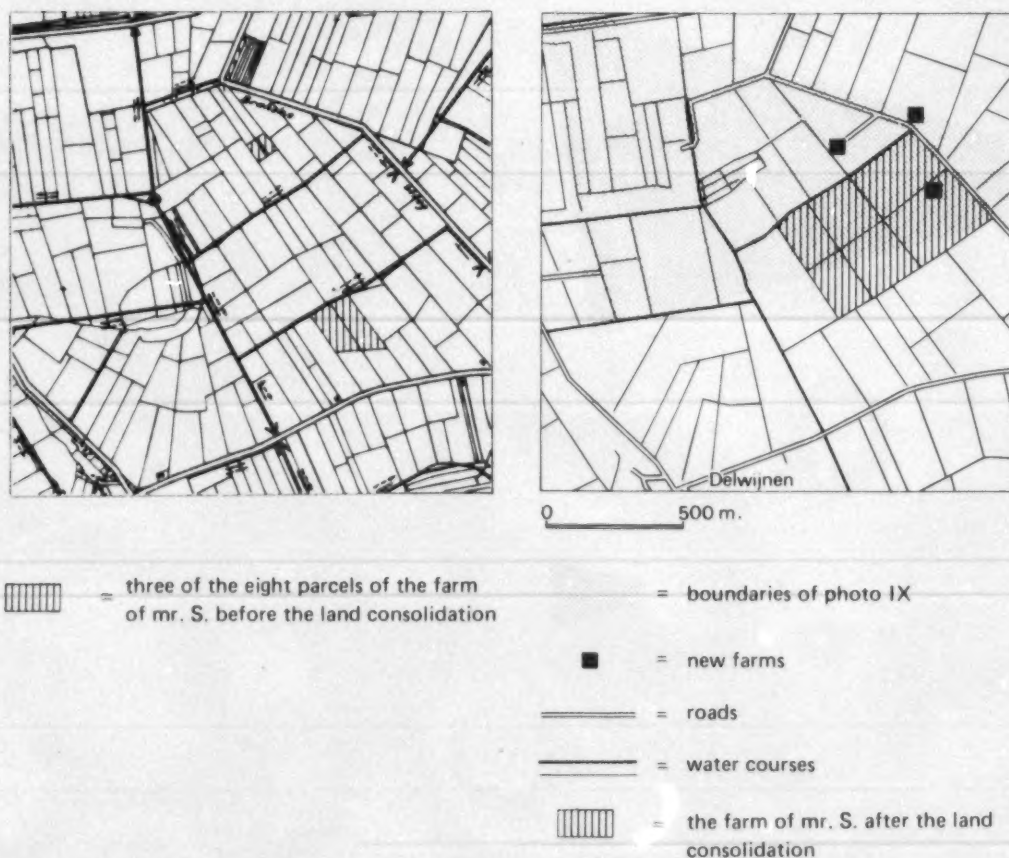


fig. 10 - Roads and watercourses before and after the land consolidation scheme in a part of the Bommelerwaard (cf. fig. 9).

The road network has been considerably improved, as has the housing situation. Old farmhouses along the river dikes have lost their function or been demolished and their occupants moved to modern farmsteads situated closer to their owners' fields.

Some statistics:

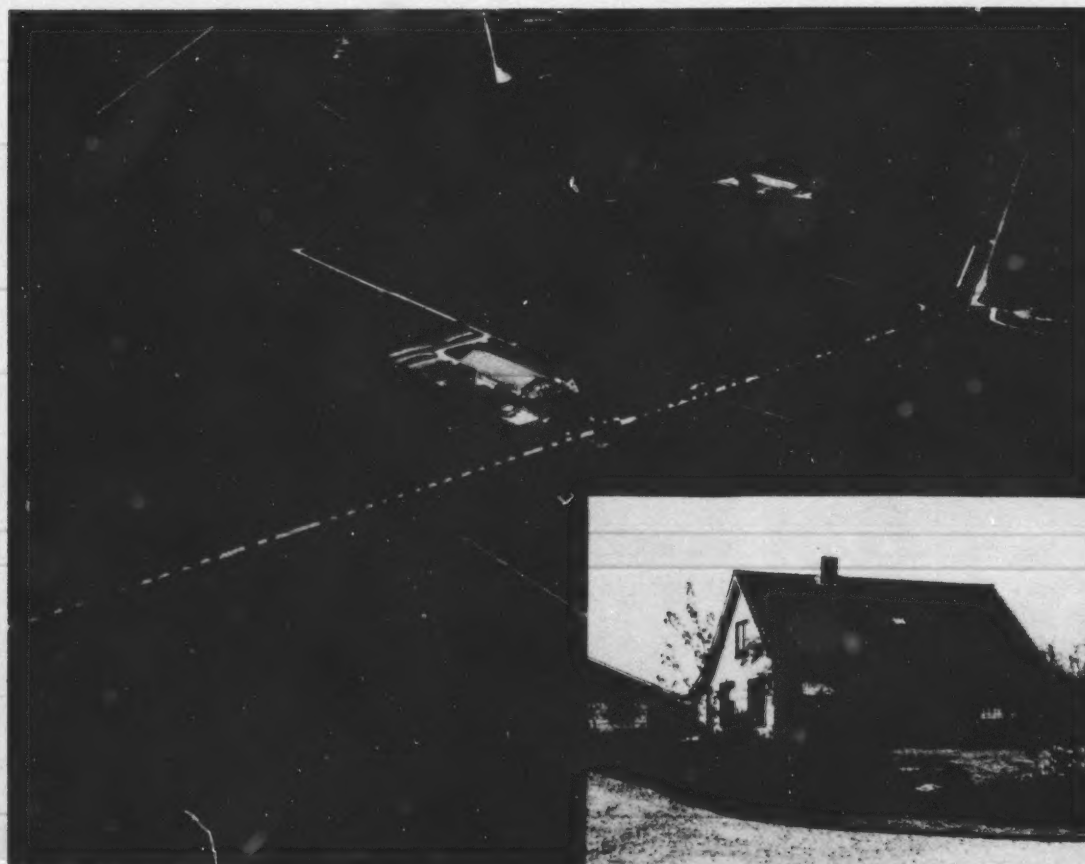
Table 3 — Bommelerwaard-West land consolidation scheme in figures

	Before land consolidation	After land consolidation
metalled roads	56 km	97 km
no. of farms	378	287
no. of parcels	2415	718
av. no of parcels per holding	6,3	2,5
average area per parcel	1,2 ha	6,5 ha

Source: Government Service for Land and Water Use, Annual Report, 1976.

The Bommelerwaard land consolidation scheme has made it possible to improve the economic condition of the agriculture there without harming the quality of the landscape. Features of high landscape value have been spared and even enhanced, thereby satisfying a new need of society:

- a society which wants to experience the landscape in its totality;



photograph 1X — New livestock farms in the Bommelerwaard, N.W. of the village of Kerkwijk. The inset photograph shows the dwelling house of the farm in the centre of the aerial photograph (= the holding of Farmer S.: cf. fig. 10).

- a society which wants to find the maximum variety in the countryside;
- a society which needs large open areas for the enjoyment of open air recreation.

5. Communications and national physical planning

Communications

The east-west flowing rivers have always had the effect of keeping the North and South Netherlands apart. People still speak of "the Netherlands above and below the great rivers".

This division has often made itself felt in Dutch history. During the Eighty Years War (1568-1648) the Spanish sphere of influence was clearly limited by the great rivers.

This situation has greatly influenced religious and social relationships between the northern and southern provinces. The rivers also formed a natural barrier during the Second World War. The southern Netherlands was liberated by the Allies in the autumn of 1944; the area north of the rivers had to wait until May 1945.

Because of the absence of good north-south connections the isolation of the areas between the rivers persisted for a long time, as did the divisive effect of the areas as a whole within the Netherlands.

The construction of railways during the second half of the last century brought the first major improvements in this situation. Initially, here too, the divisive effect of the rivers was evident: private companies constructed railways in the west and centre of the country (e.g. Amsterdam to Rotterdam and Amsterdam to Arnhem), as well as in the south, connecting with lines in Belgium and Germany. Connections between the two parts of the country were not made until the State took over railway building after 1860 (fig. 11). Three important north-south connections were built:

- Utrecht-'s-Hertogenbosch (Bois le Duc)
- Rotterdam-Dordrecht-Breda/Rosendaal
- Arnhem-Nijmegen

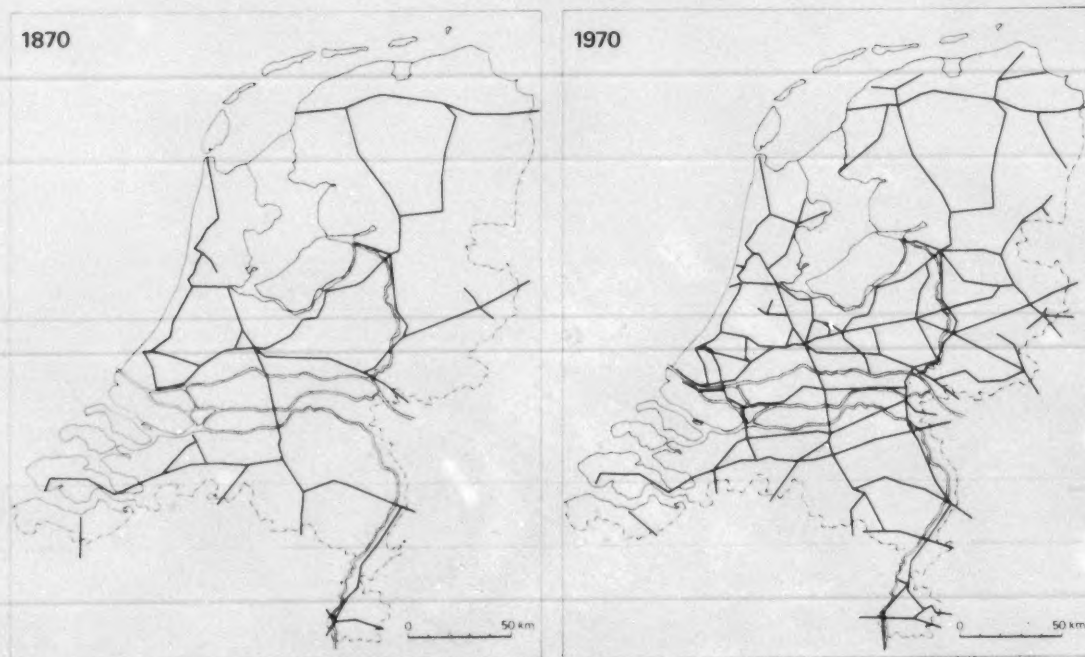
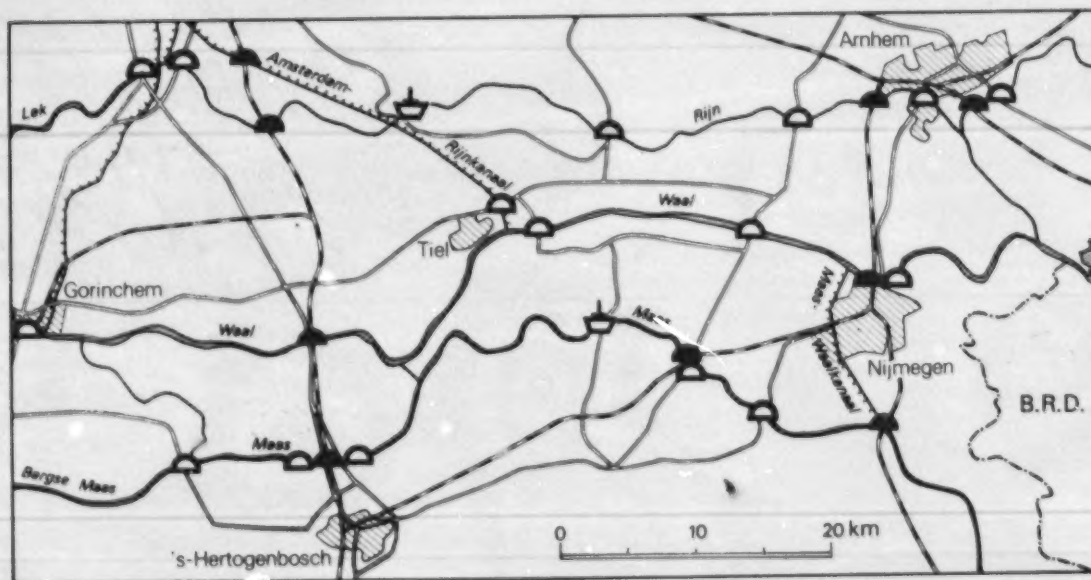
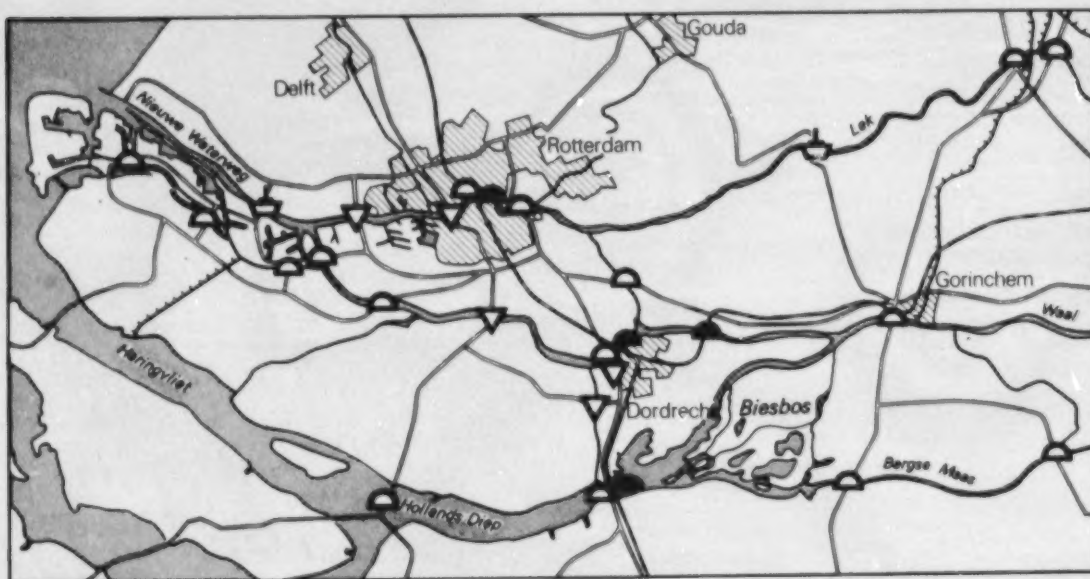


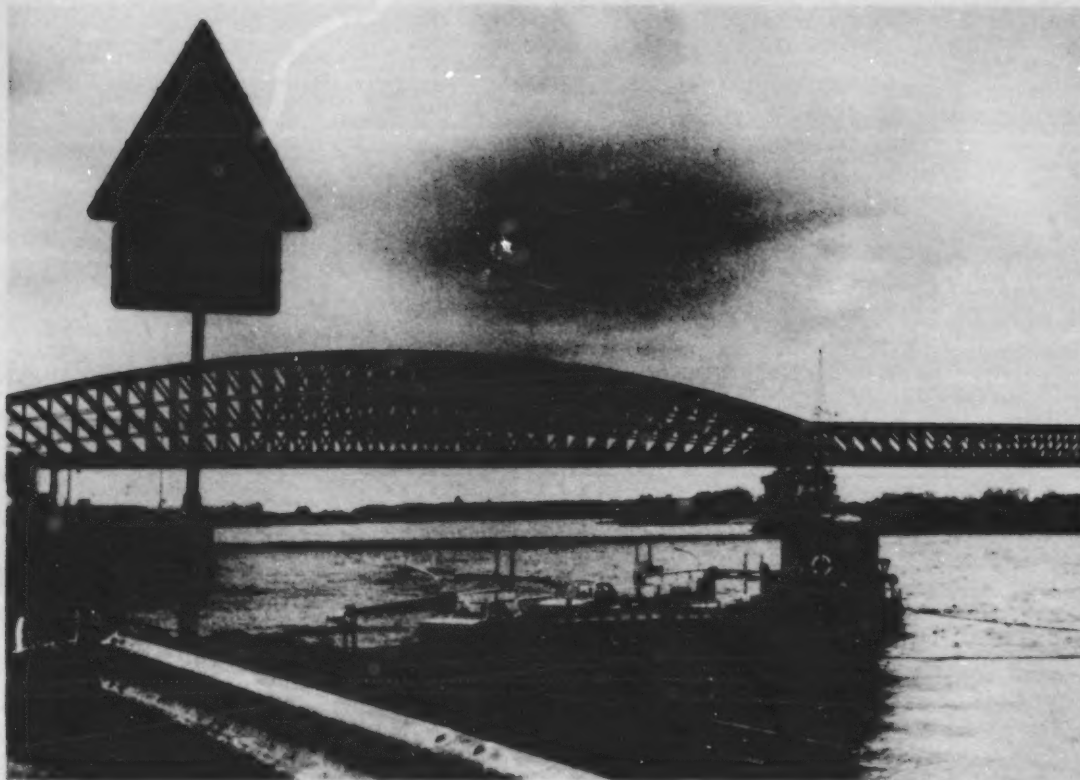
fig. 11 - Railway network in 1870 and 1970.

For these three railways the great rivers had to be spanned by a total of eight major bridges (fig. 12). Until the Second World War there was also the railway from Amersfoort to Nijmegen, which included a bridge over the Rhine at Rhenen.



- | | | | |
|---|----------|---|-----------------|
|  | rivers |  | road bridges |
|  | canals |  | road tunnels |
|  | roads |  | railway bridges |
|  | railways |  | vehicle ferries |

Fig. 12 - R.V. crossings.



photograph X — Vehicle ferry over the Lek at Culemborg. In the background the more than a century old railway bridge on the line from Utrecht to 's-Hertogenbosch.

During the course of the present century a number of motorways has also been constructed, for which even more bridges were built. This has reduced the number of timeconsuming ferries, although some of these still form important links in the road network (fig. 11 and photo X). In addition to five north-south links, a west-east motorway has been built, forming a link in the Rotterdam-Ruhr motorway route, and this runs through the whole length of the region (Rotterdam-Gorinchem-Tiel-Arnhem/Nijmegen). New road bridges are continually being built, sometimes as part of new road links, sometimes to relieve old bridges, whose capacity has become too small *) (see for example, the road bridge over the Waal opened in 1976, photo II, p. 13).

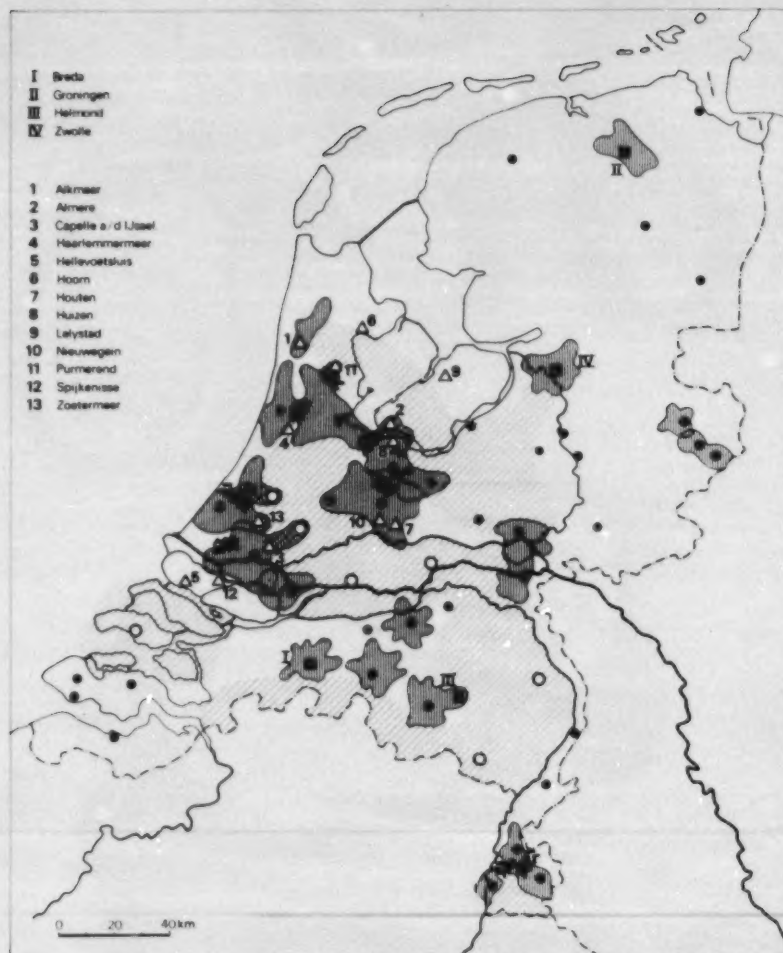
Physical planning

During recent decades the region of the great rivers has come to play an increasingly important part in physical planning at the national level. A process of enlargement of scale in physical planning has made this desirable.

The improvement in communications described above made it possible to realise such a policy. The same improvement in communications, however, brings with it the danger that urbanisation will spread into the region from the surrounding urban zones of the Randstad, the chain of Brabant towns, the Arnhem/Nijmegen area. Recreational developments (second homes, camping sites etc.) could also easily take undesirable forms. The result would be the loss of the region's buffer function, which is valuable from the planning point of view.

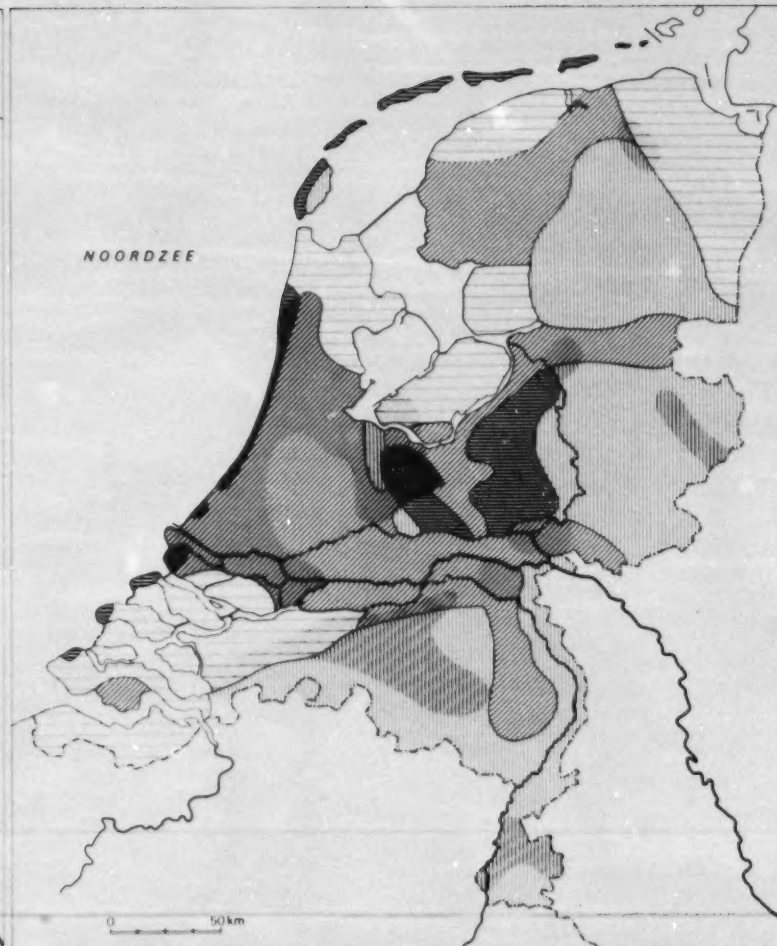
*) On this aspect, see also pp. 51-54 in the IDG Bulletin for 1978-79: "Obstacles to land traffic".

Fig. 13 — The Structure Sketches for Urbanisation and Rural Areas.



Central Open Zone
 city regions
 buffer zones

■ growth towns
 △ growth centres
 ○ central places in the Central Open Zone
 ● other urban centres



areas with agriculture as main function
 areas with nature as main function
 areas with mixed agricultural and other functions, in larger spatial units
 areas with mixed agricultural, nature and other functions, in smaller spatial units
 areas within the urban sphere of influence

In order to prevent such a development, the Second Report on Physical Planning in the Netherlands (1966) had already designated the region of the great rivers as part of the "Central Open Zone". This was an area where urbanisation was to be limited to a modest growth of a number of local service centres and where the predominantly agricultural character had to be maintained.

This was set out in more precise detail in the Third Report. In Part II, the Urbanisation Report (1976), the region of the great rivers is maintained as part of the Central Open Zone, with Gorinchem and Tiel designated as central places (fig. 13A). In Part III, the Rural Areas Report (1977), the region of the great rivers is designated within the framework of the zoning of the rural areas as "an area with mixed agricultural and other functions, in larger spatial units" (fig. 13B). "Other functions" refers in this context particularly to facilities for open air recreation.

These national guide-lines are being further worked out and given form in the provincial sub-regional plans and the municipal structure and development plans (cf. leading article in IDG Bulletin for 1979-80).

Thus, as far as physical planning is concerned, the region of the great rivers may be expected to retain its present dual character in the future, i.e.:

- as a region of passage, mainly in an east-west direction for water traffic and mainly north-south for land traffic;
- as a little-urbanised buffer region between the urban zones of the Central and South Netherlands, used mainly for agriculture, where possible varied by other functions, such as open air recreation.

6. An excursion route

From the many possibilities which exist for making an excursion through the region of the great rivers a route has been chosen which shows a wide variety of the features and processes described above. The route follows entirely roads which can be used by motor coaches.

In a few places an alternative route has been indicated which follows "B" roads. These are minor roads which may not be used by coaches, but it is possible in principle to obtain exemption from this rule for one day. Such exemption should be obtained well in advance from the provincial authorities – in this instance, the province of Gelderland at Markt 11, 6811 CG Arnhem, tel. 085-457411.

The route description is given subject to possible later alterations to the road network, signposting or traffic regulations.

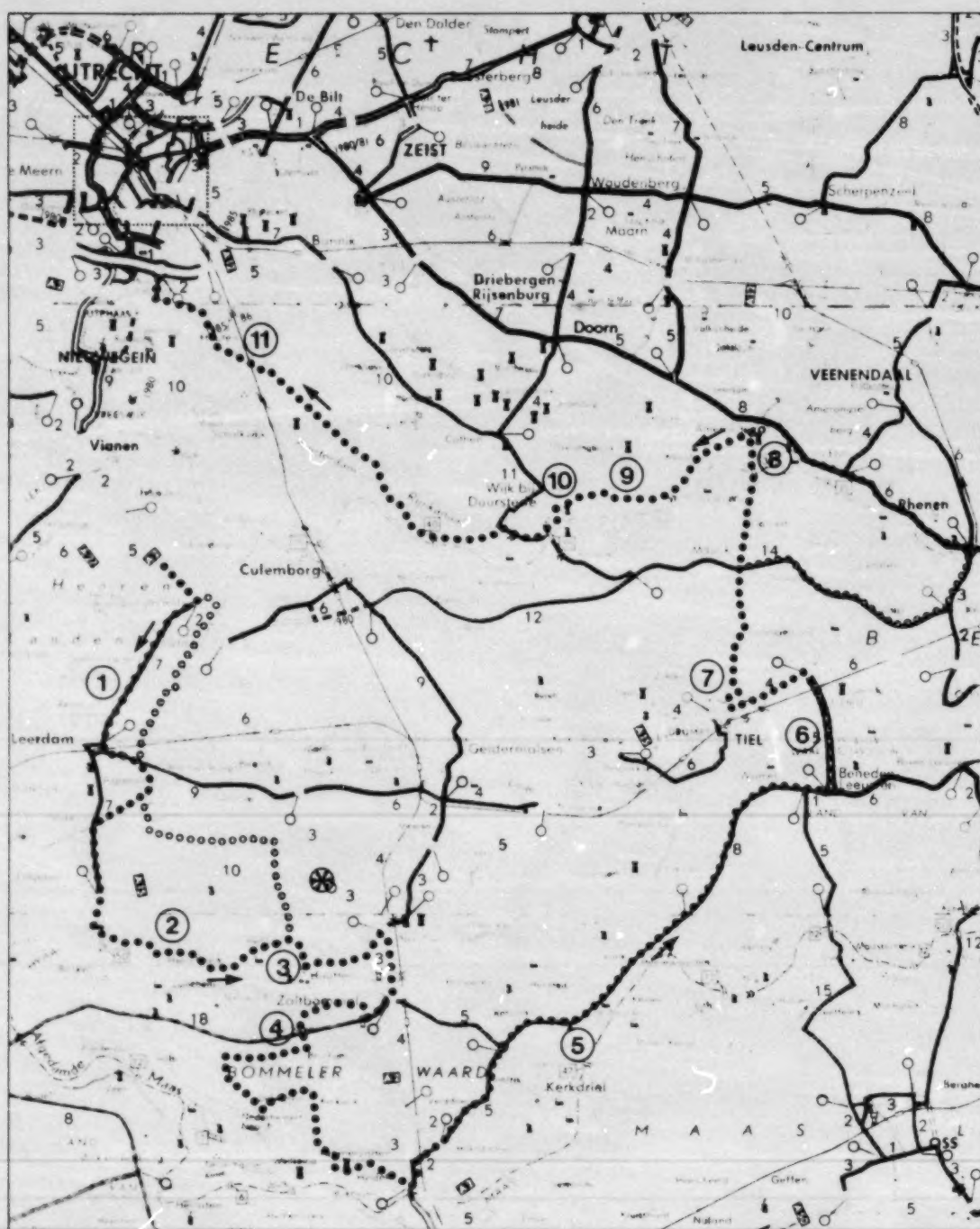
The numbers in the text below correspond with those on the route map (fig. 14); the use of the following maps published by the Royal Netherlands Touring Club, ANWB, is recommended:

- Motoring map of Zuid-Nederland, scale 1 : 200,000; or
- Tourist Maps No. 6 (Utrecht) and No. 11 (Noord-Brabant, Midden), scale 1 : 100,000.

1. - From the Utrecht – Bois le Duc ('s-Hertogenbosch) Motorway (A2), take the turn-off for Everdingen/Leerdam. The main route runs from here to Leerdam through the polder district of the Vijfheerenlanden. This is an area where the rural replanning projects were accepted by vote in January 1980. Implementation is expected to begin during the course of 1981.

An alternative route (see fig. 14) here runs parallel to the main road along the *Diefdijk*, the high dike which runs from the Lek to the Linge, forming the border between the provinces of South Holland and Gelderland (cf. p. 9).

This dike can be reached via a minor road (not for buses) on the east side of the A2 motorway (use of the 1 : 100,000 tourist map referred to above is strongly recommended). At three points the dike makes a wide bend round an area of water. These are where breaches in the dike once occurred and where it proved impossible to restore the old line because a deep channel had been scoured out by the rush of water. From the dike one obtains a good impression of the difference in landscape between the *Vijfheerenlanden* (right), where the rural replanning scheme still has to begin, and the almost completed Lek and Linge land consolidation scheme (left).



2. – From Leerdam or the end of the Diefdijk, as the case may be, drive in the direction of Asperen. Along the Linge you see here first an old pumping station with a water-wheel and, immediately afterwards, the new pumping station of "De Nieuwe Horn". This pumping station, built in 1962, pumps the water from the Lek and Linge drainage district into the Linge. The road crosses the little river Linge at the point where it contains a number of sluices. Then drive straight ahead to the Leerdam-Brakel main road, where you turn left in the direction of Brakel. One kilometre beyond the intersection with the A15 motorway turn left in the direction of Herwijnen and Zaltbommel. This route passes through the West Tielerwaard, an area where a land consolidation scheme was completed as long ago as 1971. This is therefore still largely an old style land consolidation scheme, which means that the emphasis is very much on the agricultural interests. The alternative route indicated in fig. 14, in particular, passing through the middle of the area, gives an impression of the completely "renewed" landscape with its straight roads and new farms.
3. – Beyond the village of Haaften the road runs along the top of the Waal dike, with a view of the river, the road and rail bridges and – on the opposite bank – the small town of Zaltbommel. The most characteristic elements of the latter are the still largely intact 17th century defence works and the 13th century Gothic St. Maarten's Church.
4. – As soon as you have crossed the Waal bridge take the turn-off for Zaltbommel and follow the signs for Kerkwijk and Gameren. We are now entering the Bommelerwaard and the Bommelerwaard-West land consolidation scheme. This project was completed five years later than that in the Tielerwaard and the difference appears, for example, in the better integration of the relocated farms into the landscape, the greater attention to the preservation and integration of characteristic landscape elements, and the creation of facilities for open air recreation. The roads generally have wider verges and more trees have been planted along them.

Immediately at the edge of the built-up area of Zaltbommel, at the cross-roads by the water tower, turn right and then take the first road left, in the direction of Gameren. The route here passes through one of three newly laid-out glasshouse complexes in the Bommelerwaard. The growers here are generally farmers who previously had a small mixed agricultural holding (cows, pigs, some horticulture in the open ground) with poor prospects for the future. The glasshouse holdings have an average area of 1.5 ha. The land which the growers gave up could be used to increase the area of other holdings, mainly dairy farms.

Immediately before Gameren turn off left towards Kerkwijk, cross the main road and then take the first turning right, towards Aalst. This road follows the Capreton, one of the canals dug to drain the basin lands of the Bommelerwaard. The old road to the right of the canal is now a bridle path. To the right of the next crossing is situated the complex of fishponds known as the Lieskampen. This is an area of 40 ha, which was formerly used for livestock grazing and where ponds have now been dug within the framework of the rural replanning scheme and fish released in them. At this crossroads the route turns to the left in the direction of Delwijnen. The road to Delwijnen follows the Drielse Wetering, a canal dug in 1326. Here, too, facilities have been provided for angling.

If you follow the route through Delwijnen in the direction of Kerkwijk (villages situated on an old river ridge), you pass on the right, at the end of the village of Delwijnen, a mound covered with tall trees. This is a refuge mound thrown up in the 19th century. Turn right in Kerkwijk and, after a few kilometres, left, still making for Ammerzoden, where you pass the castle of Ammersoyen, dating from 1667. From Ammerzoden take the road to Hedel, where you pass under the old motorway and the Utrecht to 's-Hertogenbosch railway. Soon afterwards you pass under the new A2 motorway (which connects with a new, wider bridge over the Meuse), going towards Kerkdriel.

5. – Continue following this road in the direction of Tiel and Nijmegen. A few kilometres beyond a roundabout you pass the point where the Meuse and the Waal approach to within scarcely a kilometre of each other. To the left and right of the road you will see the locks in the St. Andries Canal, which connects the Waal with an old bend of the Meuse.

The route continues on the Waal levee along the villages of Dreumel and Wamel. Here much fruit is grown. Two kilometres beyond Wamel turn left for the Prins Willem Alexander bridge across the Waal. This toll bridge, with a length of over 1400 metres, was completed in 1974; it was built by the "Stichting Waalbrug bij Tiel" (Tiel Waal Bridge Foundation). From the bridge one has a fine view over the river; on the northern shore, to the left, one sees a brick factory in the washland and beyond that the locks where the Amsterdam-Rhine Canal is connected with the Waal.

6. — After the toll follow the signs for Tiel and then for Maurik and Amerongen. This rather complicated route twice crosses the Amsterdam-Rhine Canal by the same bridge — once in a westerly, and once in an easterly direction — enabling one to see the great Prince Bernhard Locks on the south side of the bridge. Meanwhile, by continuing to follow the signs for Maurik and Amerongen (and sometimes "Doorgaand Verkeer" (through traffic)), you pass through a new industrial estate of the municipality of Tiel, with its nearly 30,000 inhabitants.
7. — The road to Amerongen runs from south to north across the Neder-Betuwe. Here again the difference in agricultural land use is striking. In the middle of the area there is mainly grassland and, closer to the Rhine, near the village of Eck and Wiel, more fruit growing.

A vehicle ferry crosses the Lower Rhine. From the water there is a good view of the Utrecht Hill Ridge (push moraine) on the other side. *) On the north side the road crosses the washland, which is here more than a kilometre wide.
8. — The village of Amerongen is situated at the foot of the Utrecht Hill Ridge. At the point where the road enters the village turn left immediately towards Wijk bij Duurstede. This road follows the top of the Rhine winter dike.
9. — After four kilometres you see on the left the remarkable structure of one of the three weirs in the Rhine (cf. p. 31). To the right of the road there is a car park. If you wish you can approach closer to the weir and the adjoining shipping lock on foot.
10. — Four kilometres farther to the west is the small town of Wijk bij Duurstede, where the Kromme Rijn branches off to the north west. In Roman times this river, together with the Oude Rijn (Old Rhine: Utrecht - Leiden - Katwijk), formed the most important branch of the Rhine.

For those returning to the North or East Netherlands it is possible to drive north from Wijk bij Duurstede via Cothen and Doorn.
11. — For other destinations it is advisable to take the road through Houten. This road crosses the Amsterdam-Rhine Canal just west of Wijk bij Duurstede, (Princess Irene Locks to the left), then follows the winter dike, recrosses the canal and finally reaches the village of Houten situated on the railway from Utrecht to 's-Hertogenbosch. This village will grow rapidly during the 1980's, since it is designated in the Urbanisation Report as a "growth centre" (cf. IDG Bulletin for 1979-80 and the Guide to the Randstad).

Beyond Houten one rejoins the motorway network south of Utrecht.

*) Crossing by this ferry is not without risk for long and low slung buses. The underside can be damaged or the bus get stuck on entering or leaving the ferry. An alternative route would be to turn right towards Kesteren at the crossroads in the middle of the Neder-Betuwe, at Kesteren drive north to cross the Rhine by the bridge at Rhenen and then follow the foot of the Hill Ridge to Amerongen. At Amerongen take the turn off left towards Tiel and Wijk bij Duurstede in order to rejoin the original route (see fig. 14).

II – STATISTICS

1. Introduction

This chapter gives the usual review of a number of much used statistics, for the selection of which two criteria were employed: Firstly, each year statistics are included which are subject to rapid changes and/or which experience has shown are frequently used in foreign geography lessons about the Netherlands. This also provides the opportunity of making comparisons with previous years. Secondly, as far as the less frequently used or less rapidly changing statistics are concerned, the main aim is to achieve variety, so that during the course of the years a number of different themes are treated.

For the purposes of regional statistics the Netherlands can be divided up in the following ways:

- a – 5 (or 4) major regions
- b – 11 provinces
- c – 40 COROP regions *)
- d – 80 nodal regions
- e – 129 Economic geographic regions
- f – 811 municipalities

In addition, there are further regional divisions which are employed only in specific instances, such as the division into agricultural regions, tourist regions, or the population figures by agglomeration.

The most important bodies producing statistics are:

- Centraal Bureau voor de Statistiek (Central Statistical Office – CBS),
Prinses Beatrixlaan 428,
2270 AZ Voorburg, tel. 070 - 694341.
- the administrations of the 811 municipalities.

The CBS publishes a large number of statistical reviews in many fields (including population – economy – development and recreation – environment) and at varying frequencies: monthly, quarterly, annually, one-off. Some of the publications of interest to our readership are listed in the bibliography at the end of this Bulletin.

For the Netherlands as a whole these data are to be found in the annual *Statistisch Zakboek* and – more extensively – in the *Statistical Yearbook of the Netherlands* (English text).

We should like to refer, finally, to two other statistical publications, which are of particular interest to people wishing to compare the Netherlands with other countries, or to compare recent data about the Netherlands with those of earlier years:

- "Basic Statistics of the Community: Comparison with some European countries, Canada, the United States of America, Japan and the Union of Soviet Socialist Republics."
Annual publication of the Statistical Office of the European Communities (1049 Brussels, Bâtiment Berlaymont, 200 rue de la Loi, Belgium). Available in Dutch, French, German, English, Danish and Italian versions.
- "80 years of Statistics of the Netherlands" jubilee publication, 1979 of the CBS, with figures for the period 1899 - 1979 (Dutch and English text).

*) These form a provisional regional division of the country, devised by the "Coördinatie-commissie Regionaal Onderzoekprogramma" (Co-ordinating Committee for the Regional Research Programme – COROP). The boundaries of the regions take into account the provincial and municipal boundaries and, in broad outline, the 40 regions are based on the presence of one or more urban centres and the surrounding rural hinterland.

11.2 Statistical data for 1980

The sources from which the statistics given in this chapter are taken are mainly two recent publications of the Central Bureau for Statistics (CBS, see also the bibliography at the end of this Bulletin):

- Statistisch Zakboek 1980 (Pocket Yearbook 1980)
- Bevolking der gemeenten van Nederland op 1 januari 1980
(Population of the Netherlands municipalities on 1st January 1980).

These publications generally give figures for 1st January 1980 or for the year 1979. In addition, some data for January 1981 and the year 1980 were received directly from the CBS.

a. Area, land use and environment

The CBS gives the following figures for the area of the Netherlands at 1st January 1979:

a — land area (i.e. exc. waters wider than 6 m.)	33,938 km ²
b — total area incorporated into municipalities	37,307 km ²
c — total territory of the Netherlands (i.e. inc. estuaries, territorial waters etc.)	41,160 km ²

Table 4 — Land use in km² at 1st January 1979

cultivated land	24 254
woodland	2 940
natural areas	1 603
other lands (towns, roads etc.)	5 146
waters wider than 6 metres	3 345

It is usual to take the figure given under b. as the area of the Netherlands; for the calculation of population density per km² (land), however, the figure given under a. is used.

The division between the different types of land use is given in Table 4.

b. Population

The population of the Netherlands on 1st January 1981 was 14,208,586. The population density was 419 per square kilometre of land, 381 per square kilometre of the total incorporated area and 345 per square kilometre of the total territory of the Netherlands (cf. the data above).

Table 5 gives the population trends for 1980.

Table 5 — Key demographic figures for 1980 (per mille)

Birthrate	12.8	
deathrate	8.1	
natural increase		4.7
immigration	8.0*	
emigration	4.2*	
net migration		3.8*
total population growth		8.5*

In absolute figures the population increased by 117,572 persons in 1980. 4.7% of the growth was accounted for by natural increase (67,015) and 3.8% by net migration gain (53,167). The gain from foreign migration was largely the result of immigration from the Mediterranean countries (24,346)* and Surinam (16,704)*.

Table 6 gives, by province and region (cf. fig. 15), the area, population and population density at 1st January 1981, and the population increase since 1st January 1976.

As far as future population trends are concerned, the CBS has made two projections: a minimum and a maximum variant. The minimum variant is based on the assumption that the average number of children per family will decline to about 1.5, with the result that the population will rise to 14.3 million in 2000 and will then gradually decline. The maximum variant is based on the assumption that there will be a modest rise in the number of children per family to 1.9, giving a population of about 15.2 million in 2000, after which it rises to 15.4 million in 2020 and only then begins to decline.

* provisional figures.



Fig. 15 – Provinces and regions.

— — — provincial boundaries
 ●●●●● boundaries of provinces and regions

Table 6 – Area, population density and population increase by province and region.

	land area *) in km ² 1 Jan 81	population x 1,000 1 Jan 81	population per km ² of land 1 Jan 81	percentage growth 1 Jan 76 to 1 Jan 81
Groningen	2 336,58	556,9	238	+ 3,1
Friesland	3 353,00	589,3	176	+ 5,1
Drenthe	2 654,07	421,5	159	+ 3,8
North Netherlands	8 343,65	1 567,6	188	+ 4,0
Overijssel	3 812,52	1 027,8	270	+ 4,3
Gelderland	5 009,02	1 708,9	341	+ 4,2
S. Lake IJssel Polders	954,82	75,8	79	+ 112,9
East Netherlands	9 776,36	2 812,5	288	+ 5,7
Utrecht	1 331,87	907,7	681	+ 4,6
North-Holland	2 668,26	2 315,7	868	+ 0,9
South Holland	2 904,83	3 106,7	1069	+ 1,9
West Netherlands	6 904,96	6 330,1	917	+ 1,9
Zeeland	1 785,14	351,7	197	+ 5,8
South West Netherlands	1 785,14	351,7	197	+ 5,8
North Brabant	4 958,06	2 071,9	418	+ 5,3
Limburg	2 171,46	1 073,4	494	+ 2,1
South Netherlands	7 129,52	3 145,3	441	+ 4,2
NETHERLANDS **)	33 939,63	14 208,6	419	+ 3,5

*) area exc. waters wider than 6 metres.

**) population of the Netherlands inc. persons without a fixed address entered in the Central Population Register.

Since the beginning of this century the breakdown of the population by age groups has shown a continuing relative decrease in the proportion of young people, an increase in the 20-64 years age group and, especially, in the age group of 65 years and over (Table 7).

Table 7 – Population by age at 1st January (in %) and total population

Year	Total Population	0-19 years	20-64 years	65 years and over
1900	5,1 mln.	44,3	49,7	6,0
1930	7,8 mln.	40,3	53,6	6,1
1960	11,4 mln.	37,9	53,1	8,9
1970	13,0 mln.	35,9	54,0	10,1
1980	14,1 mln.	31,5	57,1	11,5

c. Economy

Economically active population

Table 8 gives the breakdown of employment in 1980 (volume of labour in man-years).

Table 8 – Volume of labour, % **1980**

agriculture and fisheries	5,5
minerals extraction and manufacturing	29,6
trade, traffic and other services	59,9
unemployed	4,9

The largest numbers of unemployed persons are to be found in the provinces of North-Holland, South-Holland and Utrecht. Unemployment as a percentage of the total working population is highest in the northern provinces of Groningen, Friesland and Drenthe and in the southern provinces of North-Brabant and Limburg (fig. 16).



Fig. 16 – Topological map of male unemployment, January 1981
(the area of the provinces is proportional to the number of economically active males (excluding self-employed)).

Agricultural holdings

The number of agricultural holdings declined between 1971 and 1979 by nearly 17%; the average size of holding, on the other hand, increased by 15% (Table 9).

Table 9 — No. of agricultural holdings, area of agricultural land and average size of holding, 1971/1980

	May 1971	May 1980
no. of holdings by type of holding		
livestock holdings	114.121	92.448
arable holdings	15.420	16.715
horticultural holdings	36.689	28.659
mixed holdings	12.391	7.172
total no. of holdings	178.621	144.994
area of agricultural land (ha.)	2.128.500	2.020.237
average size of holding (ha.)	11,9	13,9

The figures of agricultural imports and exports in Table 10 show, among other things, the high proportion accounted for by the EEC countries (especially in respect of exports) and, particularly, by the Federal German Republic.

Table 10 — Agricultural imports and exports

	1960	1980
total agr. exports in guilders x 1,000 mill.	4,7	31,8
to Fed. Ger. Rep., %	30,5	34,1
to other EEC, %	36,1	40,1
total agr. imports in guilders x 1,000 mill.	2,9	22,6
from EEC countries, %	15,2	44,8
from USA, %	26,9	19,9
agr. exports as % of total Neth. exports	30,7	22
trade surplus from agr. products in guilders x 1,000 mill.	+ 1,77	+ 9,3

Source: Min. of Agriculture and Fisheries.

Agriculture accounts for more than a fifth of the total Dutch exports by value and the value of agricultural exports always exceeds that of the import of agricultural products.

Industry

The energy balance in 1980 was as follows (Table 11):

Table 11 — Exploitation, import, export and consumption of coal, petroleum, natural gas and nuclear energy, 1980

Unit: 10 ¹⁵ joules *)	coal	petroleum	petroleum products	natural gas	nuclear energy + others	TOTAL
Exploitation	—	67	—	2885	105	3057
Imports	219	2131	807	120	2	3279
Exports	60	1	1428	1731	3	3223
Bunkers	—	—	294	—	—	294
Withdrawn from stocks	2	— 40	— 14	0	—	— 52
Gross Consumption	161	2158	— 930	1274	104	2767

*) 10¹⁵ joules correspond to 23.4 million kg. of petroleum or 31.6 million cu.m. of natural gas.

Table 12 gives a picture of the exploitation, import, and consumption of natural gas for the years 1965, 1970 and 1980.

Table 12 – Natural gas balance; unit: 10¹⁵ joules (see note to Table 11)

	1965	1970	1980
Exploitation	57	1005	2885
Import	—	—	120
Export	1	359	1731
Available	53	648	1274
Consumption by:			
power stations	11	172	211
manufacturing	16	216	394
private households	15	181	478

The table shows that private households have become the largest class of consumer. This accords with the policy which aims to keep natural gas available to this group of consumers for as long as possible. Within the framework of this policy a number of industries and power stations are turning (or returning) to the use of coal or oil. During 1980 six new gasfields were discovered in the Netherlands or in the Netherlands section of the continental shelf, but their reserves are less than the consumption in 1980. As a result, the total estimated Netherlands natural gas reserves declined in that year to 2,250 thousand million cubic metres. Up to the present nuclear energy plays a very subservient role in the energy supply of the Netherlands.

The following table gives a summary of a number of important branches of industry.

Table 13 – Manufacturing industry: no. of firms, employees and value of production in selected branches of industry, 1977

	No. of firms	No. of employees x 1,000	Production (exc. VAT) in millions of guilders
Metal mfg.	1591	124,4	15.468,4
Food, drink and tobacco	1568	151,8	42.813,5
Machinery	1130	88,7	9.432,7
Printing	1027	61,1	8.099,2
Woodworking and furniture	899	37,2	3.596,7
Building materials, pottery and glass	755	39,1	4.545,9
Vehicles	476	76,3	9.419,0
Clothing	440	22,8	1.769,3
Textiles	389	42,5	4.441,3
Chemicals	337	86,8	19.945,4
Electrical engineering	195	107,7	12.881,7
Other manufacturing	730	63,7	7.936,6
Total manufacturing	9537	901,5	140.439,7

Foreign Trade

In 1980 the total value of imports into the Netherlands amounted to 152,279 million guilders, which is about 10,762 guilders per head of the population. Exports amounted to 146,860 million guilders or 10,379 guilders per inhabitant. Table 14 gives a summary of the kinds of commodities imported and exported, while table 15 lists the countries with which the Netherlands traded.

Table 14 -- Imports and exports by commodity group, 1980 in %

Imports		Exports	
Raw materials and semi-manufactures	63	Unprocessed agricultural products	7
consumer goods	16	minerals	8
capital goods	10	total manufactures	84
other goods	10	of which:	
		food, drink and tobacco	16
		textiles, clothing	4
		petroleum products	15
		chemical products	18
		metal goods	25
		other manufactures	5

Table 15 -- Imports and exports by countries/regions, 1980, in %

	Imports	Exports
Federal German Republic	22	30
Belgium and Luxemburg	12	15
France	7	11
United Kingdom	8	8
Italy	3	6
Other EEC countries	1	2
total EEC	53	72
U.S.A.	9	2
other countries	38	26

III – BRIEF NOTES

1. Traffic

Schiphol Line

On 31st May 1981 the Schiphol Line, the first section of which (from Schiphol to Amsterdam South) was opened in 1978), was connected at Leiden with the national rail network (fig. 17). As a result, besides Amsterdam, The Hague and Rotterdam now have a direct rail connection with the underground railways station at the national airport.



Fig. 17 – The Schiphol Railway.

In the Haarlemmermeer, where more than 4,000 trees have been planted along both sides of the railways, small stations have been opened to serve the villages of Hoofddorp and Nieuw Vennep. In Amsterdam the line was extended to the "RAI" exhibition and conference centre in the south of the city. At the same time, the Minister of Transport has confirmed the line for the continuation of the railway through the west of the city to the Central Station. After the completion of this section the line will also be able to serve as a second full-scale railway link between Amsterdam and The Hague. The first line between these cities, constructed around 1840, goes via Haarlem with a detour round the Haarlemmermeer, which had not yet been drained at that time. The most difficult section of the Schiphol Line technically was the nearly six kilometre long tunnel under the airport, which itself is already more than four metres below sea level.

Ports

In May 1981 agreement was reached between the Government and the municipality of Rotterdam about the financial aspects of deepening the "oil channel". This is a shipping channel 12 kilometres long, dredged in the floor of the North Sea as an extension of the New Waterway. Because of the increased size of ships it proved necessary to deepen the channel from 68 feet (21.1 m.) to 72 feet (22.3 m.). Ships with a capacity of about 310,000 tons will then be able to reach the dock basins of Europort at high water. The costs, amounting to about 130 million guilders, will be borne by Rotterdam.

The State will bear the management and maintenance costs and guarantees the municipality compensation of a maximum of 50% if the extra income from harbour dues proves insufficient after the deepening of the channel.

In the summer of 1980 seven firms decided to lay out a large coal terminal on the Maasvlakte. In this port zone built out into the North Sea, which was completed in 1974 there are still large areas of unused land. It is intended that the terminal will eventually have a throughput of 24 million tons of coal per annum. The coal will largely be transhipped by barge to the hinterland (mainly the Federal German Republic).

In 1980 the port of Rotterdam handled over 20% more coal than in the preceding year. There was also a clearly perceptible increase in other sectors, e.g. in LASH traffic (+14%), ore transit (+10%) and container traffic (+9%). There was nevertheless a decline in the total tonnage handled — from 292 to 277 million tons — mainly as a result of a 17% decrease in the import and export of crude oil. Also of great importance is the transhipment of, mainly Japanese, cars; at present about 250,000 of these cars are shipped into Rotterdam (and almost the same number into the port of Amsterdam).

For the latter city, with the country's second seaport, the government's decision to collaborate in principle in the laying out of an outpost at IJmuiden was important. The plan is to build here, on the outer side of the locks in the North Sea Canal and close to the Dutch iron and steel works, a transhipment port for ore and coal, accessible to ships up to 150,000 tons. The costs will be shared by the State and private enterprise (Hoogovens).



photograph XI — Almere-Haven under construction; on the left, Lake Gooi (looking SW).

2. Civil Engineering Works

Lake IJssel Polders

In southern Flevoland, which fell dry in 1968, the process of land conversion is in full swing. On 1st January 1981 a total of 4,500 ha. of agricultural land in this polder had been leased to 91 farmers. In a large part of the polder extensive arable farming is being temporarily carried on by the IJsselmeer Polders Development Authority.

The polynuclear town of Almere in the south-west of the polder is also growing rapidly. On 1st January 1981 there were already 12,200 people living in the first nucleus of Almere-Haven, situated on Lake Gooi (photo XI). The construction of the second nucleus of Almere-Stad, where the first residents arrived in mid-1980, is also proceeding rapidly. In 1980 more than 500 dwellings were completed there. At the beginning of 1981 some 90 firms had established themselves on the industrial and commercial sites of the new town. They included light industry, wholesaling, offices, etc.

Reference was already made in the last IDG Bulletin to the natural scientific value of the Oostvaarders Lakes, a marshy area in the north-west of the polder. Because of the difference in water level between this area and the remainder of the polder, a dike has been constructed around the lakes. No decision has yet been taken about a possible partial realignment of the Flevo Railway (Amsterdam - Almere - Lelystad), although a start has been made at a few places with the construction of this line, or with preparations for its construction (see fig. 16 in the IDG Bulletin of 1979-80).



fig. 18 - Shape of the Markerwaard according to the Government's policy proposal.

According to the plans, Almere should be connected to the national rail network by 1987 and Lelystad - where at present more than 40% of the occupied population work in Amsterdam - by 1988.

With reference to the Markerwaard, it was stated in the last bulletin that the government had decided in principle on impoldering and that, shortly thereafter, a public participation process within the framework of the "Key Planning Decision" procedure would be set in motion. This led in September 1980 to the publication of the report on "De ontwikkeling van het Markerwaardgebied" (The development of the area of the Markerwaard). Such intensive use was made of the opportunity to comment on this report that it was decided to extend the period for public participation by several months. The government's policy proposal favoured the reclamation of a 41,000 ha. polder with wide marginal lakes on the west side (see fig. 18). In the original plans the polder, 60,000 ha. in extent, would have bordered almost directly on the mainland of North Holland. According to the report, the present proposals are based on a solution which does full justice to the advantages of reclamation, while reducing the disadvantages as far as possible.

Here are some of the stated advantages:

- gain of high quality agricultural land;
- fresh space for urban development and possible special uses such as an airport and military training grounds;
- possibilities for forestry, small-scale water-sports and shore-line recreation.

And here are some of the disadvantages:

- reduction of the area of natural fresh water;
- reduced possibilities for large-scale water-sports and fishery.

A final decision will certainly not be taken earlier than during the course of 1982.

In the spring of 1981 an interdepartmental committee reported favourably on a private plan to construct an "energy basin" on part of the future Markerwaard. A thousand wind turbines would pump water from Lake IJssel into a reservoir surrounded by a dike thirty metres high. By permitting the water to flow back into Lake IJssel via turbines, 1600 MW of electricity can be generated. The reservoir principle makes the generation of electricity independent of the fluctuating supply of wind energy. No decision has yet been taken about this plan, which is now being studied further.

Delta Plan

Because of the technical problems there has been some delay in the construction of the pier dam in the mouth of the Eastern Scheldt. It now seems that it will not be possible to complete the dam in 1985 according to plan. The problems arose around the preparation of the soft bed of the Eastern Scheldt at the points where the 66 piers, each weighing about 17,500 tons, are to be located. The construction of the piers, in a dry dock on an artificial island in the middle of the Eastern Scheldt, is meanwhile progressing steadily.

3. Physical Planning

In continuation of the section of the same name in previous issues of the IDG Bulletin, we give below a summary of all the plans in the field of physical planning which are at present passing through the Key Planning Decision (PKB) procedure, i.e. the public participation procedure in respect of physical planning proposals of national importance. (On this matter see, for example, "Compact Geography of the Netherlands", p. 38 and the IDG Bulletin for 1979-80, pp. 18-19 and 46).

The publication of each key planning decision consists in principle of five parts:

- A — The government's policy proposal
- B — A summary of the comments received
- C — A report from, *inter alia*, The Advisory Council for Physical Planning
- D — The government's decision
- E — Text of the Key Planning Decision confirmed after parliamentary debate.

In the spring of 1981 the situation in respect of the various reports and schemes *) was as follows: —

- a — procedure wholly completed, i.e. parts A-E published:
 - the Orientation Report, i.e. part 1 of the Third Report on Physical Planning in the Netherlands (see IDG Bulletin, 1979-80, pp. 21-22);
 - the Urbanisation Report, part 2 of the Third Report (see, for example, "Compact Geography of the Netherlands", p. 40 and IDG Bulletin, 1979-80, pp. 22-26);
 - The Wadden Sea Report (see IDG Bulletins, 1977-78, pp. 45-47, and 1978-79, p. 66).

With reference to policies relating to the Wadden Sea, there are also other activities to report. A Wadden Sea Act is in an advanced state of preparation while large parts of the Wadden Sea — mainly brooding and foraging areas for birds and seals — will be designated as State nature reserves in the near future.

*) Where the plans comprise various aspects of future land use it is customary to speak of a 'Report', the appended map to which is called a 'Structure Sketch'. Where plans relate to a single facet of the physical structure they are described as 'Structure Schemes'. These are revised after five years, the reports after ten years. They must then again pass through the PKB procedure.

- b — procedure nearly completed, still awaiting parliamentary debate or publication of report of parliamentary proceedings:
 - the Rural Areas Report (see Compact Geography of the Netherlands, p. 40 and IDG Bulletin, 1979-80, pp. 26-28.)
 - the Structure Scheme for Civil Airfields (see IDG Bulletin, 1979-80, p. 47). In the Structure Scheme, which has been sent to the Second Chamber, the government takes as its starting point the maintenance of Schiphol as the national airport (with a "rotated" fourth runway to reduce the noise nuisance for nearby municipalities), together with the retention of Zestienhoven near Rotterdam as a regional airport and retention of the option of constructing a second national airport in the Markerwaard, if the latter should be reclaimed.
 - the Structure Scheme for Housing (see IDG Bulletin, 1977-78, p. 47).
 - the Structure Scheme for Traffic and Transport (see IDG Bulletin, 1979-80, pp. 46-47).
Part d — the Government's Decision — repeats as its points of departure limitation of the use of the private car where and when it causes too much nuisance, and the provision of facilities for public transport and slow traffic (cycle and moped).
 - the Structure Scheme for Navigable Waterways; in the policy proposal (part a) emphasis is placed on the removal of a number of bottlenecks in the main waterways network, the latter comprising waterways of national importance.
 - the Structure Scheme for Domestic and Industrial Water Supply, 1972 (see IDG Bulletin, 1977-78, p. 45).
 - the Structure Scheme for Electricity Supply (see IDG Bulletin, 1977-78, p. 47).
- c — procedures where the government's policy proposal and the summary of the comments have been published, and where the official reports are now awaited.
 - Supplementary Structure Scheme for Electricity Supply. The PKB procedure has been suspended because of the imminent broad social discussion on the subject of nuclear energy.
- d — procedures where only the Policy Proposal (part a) has been published and where public participation is now in progress or has recently been concluded, without the summary of comments yet having been published.
 - the Report on the Development of the Area of the Markerwaard (see p. 43 of this Bulletin).
 - the Structure Scheme for Land Use (cf. the leading article of this Bulletin and, particularly, Section 4 on "Land Consolidation and Rural Planning").
 - the Structure Scheme for Open Air Recreation. Among other things, this document designates a number of areas where new recreational facilities should be provided (mainly in urban areas) as well as agricultural areas where recreational use should also be encouraged (these include the Green Heart of the Randstad, the central zone of North Brabant, South Limburg and Twente) and, lastly, a number of 'national landscapes' where recreation should be developed according to certain procedures. A plea is also made for an increase in the number of moorings for pleasure boats, particularly in the Lake IJssel and Delta areas.
 - the Structure Scheme for Defence Lands, with the government's plans for determining the sites and lay-out of military training grounds, barracks, shooting ranges, airfields and munition storage depots.
 - a Partial Revision of the Structure Scheme for Navigable Waterways.
 - the Second Structure Scheme for Domestic and Industrial Water Supply. This is the first structure scheme to have a revision published after five years; the government's decision on the first version was published in 1975. A modification is certainly appropriate in this instance, now that water consumption has been found to be rising less quickly than was originally expected, while the problem of pollution is assuming increasingly serious forms (on this see, for example, IDG Bulletin, 1978-79, pp. 15-20).

the Structure Scheme for Seaports, in which the government puts forward the idea that, from the point of view of economic use of land, the extension of seaports sites is undesirable in principle as long as sufficient sites are still available elsewhere in the country. Examples would be the Maasvlakte in the area of Rotterdam-Europort and the Eemhaven in the north-east of the province of Groningen. The idea of the construction of a Rhine Port on the north bank of the New Waterway for container and roll-on/roll-off traffic has also again been taken out of cold storage. This is in contrast to various other seaports projects which have been in existence for many years, but are now no longer being seriously considered (they include a project for a seaport in the eastern part of the Eastern and Western Scheldt).

the Structure Scheme for Nature and Landscape Conservation. This scheme stands in close relationship to two other "green" structure schemes; those for Open Recreation and for Land Use. It is therefore intended that the public participation procedures for these three structure schemes should run simultaneously.

III.4. Excursions, addresses.

The previous Bulletin included a list of addresses of museums, exhibitions, information agencies etc., intended for people preparing excursions to the Netherlands or wishing to obtain information direct from particular agencies. We are repeating this list in the current edition of the Bulletin, with a number of amendments.

PLACE AND INSTITUTION	OPENING TIMES	ADDRESS AND TELEPHONE NUMB.
Aalsmeer , Flower auction	Mon-Sat, c. 8-11	Legmeerdijk 313, 02977 - 34567
Amsterdam Historical Museum (history of the city)	Mon Sat, 9.30-17 Sun 13-17	Kalverstraat 92, 1012 PH Amsterdam, 020 - 255822
Aviodome National Aviation Museum	10-17 (Nov-Mar, closed Mon)	Schiphol, Amsterdam, 020 - 173640
Netherlands Institute for Industry and Technique	Mon-Fri 10-16 Sat-Sun 13-17	Rozengracht 224, 1016 SZ Amsterdam, 020 - 248168
Netherlands Maritime Museum	Mon-Sat 10-17, Sun 13-17	Kattenburgerplein 1, 1018 KK Amsterdam, 020 - 254175
Town Planning Department, Urban Development Exhibition	Mon-Fri 12.30-16.30 Thurs 18-21 (by appt. only)	Keizersgracht 440, 020 - 222962
Arnhem National Folklore Museum — The Open Air Museum	May-Aug, 9-18, Sun 11-18 Apr/Sept/Oct 11-17	Hoeferlaan, 6816 SG Arnhem, 085 - 452065
Biddinghuizen (E. Flevoland) Flevohof — exhibition of Dutch agriculture, model farms etc.	8.30-18	Spijkweg 30, 03211 - 514
Enschede Twente — Gelderland Textile Museum	Tues-Sat, 10-12 and 14-17 Sun, 14-17	Espoorstraat 182, 7511 CM Enschede, 053 - 319093
Groningen Northern Institute for Industry and Technique	Mon-Fri, 9-12, 13.30-16.30	Agricolastraat 33, 9711 TP Groningen, 050 - 135692
Haarlemmermeer Cruquius Museum (in former steam pumping station; history of the Haarlemmermeer).	Apr-Sept 9-17, Sat-Sun 10-16 Oct-Nov 9-16, Sat-Sun 10-16, Dec-Mar, by appt. only.	Cruquiusdijk 32, 2141 EW Vijfhuizen, 023 - 285704
Haarlem Geological Museum	Mon-Fri 9-12 and 14-17	Akerstraat 88, 045 - 711910

PLACE AND INSTITUTION	OPENING TIMES	ADDRESS AND TELEPHONE NUMB.
Kerkrade Mining Museum, Rolduc Abbey	May-15 Sept, Tues-Sat 9-17 16 Sept-Apr Tues-Fri 13-16.30	Heyendahlilaan 82, 045 - 457138
Kinderdijk 16 windmills	Apr-Oct, Mon-Sat 9.30-17.30	near Alblasserdam, 01858 - 4118
Koog aan de Zaan Mill Museum	Tues-Sun 14-17	Museumlaan 18, 075 - 215029
Lauwersoog , Expozee (drainage and reclamation of the Lauwers Sea; Wadden Sea).	May-Sept: Tues-Fri 10-17, Sat-Sun 14-17, Oct-Apr: by appt. only	Expozee, Strandweg 1, 9976 VS Lauwersoog, 05193 - 9045
Limmen (NH) Bulb growing Museum	Mon-Fri 10-12 and 14-16	Düsseldorperweg 64, 02205 - 1950
Rotterdam Municipal Information Centre (films, slide sets etc.) Municipal Water Supply Undertaking: - Biesbos Reservoirs - Berenplaat Waterworks - Kralingen Waterworks	Mon-Fri 9-17 (by appt. only) (by appt. only)	Coolsingel 42, 010 - 172182 Galvanistraat 15 (office) 010 - 896955
Municipal Port Department (films, slide sets etc.)	(by appt. only)	Europoint III, Galvanistraat, 010 - 896911
De Dubbelde Palmboom - Historical Museum (urban history)	Mon-Sat 10-17 Sun 11-17	Voorhaven 12, 3024 RM Rotterdam, 010 - 761533
Prins Hendrik Maritime Museum	Mon-Sat 10-17, Sun 11-17	Burg. 's Jacobplein 2, 3015 CA Rot- terdam, 010 - 361044
Schoonoord (Dr) De Zeven Marken Open Air Museum (Drente c. 1900)	Palm Sunday - Oct, 9-18	Tramstraat 73, 7848 BJ Schoonoord, 05918 - 579
Sliedrecht (ZH) Dredging Museum	Tues-Sat, 14-17 (for groups, other times possible by appt.)	Molendijk 204, Sliedrecht, 01840 - 4545
Utrecht Hoog Catharijne Information Centre (Urban renewal project; film etc.)	(by appt. only)	Hoog Catharijne, 030 - 310617
Netherlands Railways Museum	Tues-Sat 10-17, Sun 13-17	Johan van Oldenbarnevelddlaan 6, 030 - 318514
Veendam Peat Colonies Museum	Mon-Fri 14-17	Kerkstraat 18, 9641 AR Veendam, 05987 - 16393
Vlaardingen Sea Fisheries Museum	Mon-Sat 10-17, Sun 14-17	Westhavenkade 53, 010 - 348722
Wageningen International Soil Museum (soils from all over the world)	8.30-17.15 (by appt. only)	Duivendaal 9, PO Box 353, 6700 AJ Wageningen, 08370 - 19063
Agricultural Research Dept. Visitors' Centre	Mon-Fri 9-17	Mansholtlaan 10-12, 08370 - 19145
Zaandam The Zaanse Schans (village of traditional Zaan timber buildings, with various small museums)	village freely accessible; museums 10-17	Zaanse Schans, Zaandam
DELTA REGION		
Delta Expo	Apr-15 Oct 10-17, 16 Oct-Mar, by appt. only	Haringvliet Locks, 3251 LD Stellen- dam, 01879 - 1600 (for appts. 16 Oct- Mar, National Tourist Office, Bezuidehouthoutseweg 2, The Hague, 070-814191)
Eastern Scheldt Works (visit by bus to construction site of Eastern Scheldt dam, information centre)	10-17	Burgsluis, Schouwen-Duiveland (bus departs from here every half hour for the work island)

PLACE AND INSTITUTION	OPENING TIMES	ADDRESS AND TELEPHONE NUMB.
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NATURE RESERVES, NATIONAL PARKS, RECREATIONAL AREAS

Visitors' Centres:

Amsterdam Amsterdam Wood, "Bosmuseum"	Mon-Sat 9-16, Sun 10-17	Koenenkade, Amsterdamse Bos, 020 - 431414
Municipality of Amsterdam Water Supply Undertaking: visitors' centre in dune water catchment area (water supply and nature)	9-17	Vogelenzangseweg, Vogelenzang, 023 - 246781
Castricum De Hoep Visitors' Centre (dunes)	May-Aug, 10-12, 14-17; Sept-Apr Sun 13-16	Zeeweg, Castricum, 02518 - 52243
The Hoge Veluwe National Park, "De Aanschouw"	Apr-Oct, 10-17	Houtkampweg, Otterlo, 08382 - 627
Overveen The Kennemer Dunes Visitors' Centre	15 Apr-15 Sept 9-16.30, 16 Sept-14 Apr Sat-Sun, 9-16.30	Militairenweg 4, 2051 EV Overveen, 023 - 271871
Spaarnwoude Crayenstein Visitors' Centre (recreational area)	Apr-Oct, Sat 13-17, Sun 10-18 (at other times by appt.)	Machineweg 1, Halfweg, 02907 - 2444
Texel , Natural Recreation Centre (Texel and Wadden Sea)	Mon-Sat 9-17	Ruyslaan 92, 1796 AZ De Koog, 02228 - 741
Ossenzijl (Ov) "De Weerribben" (area of lakes and low peat in N.W. Overijssel)	13.30-16.30	Hoogeweg 27, 8376 EM Ossenzijl, 05617 - 272
Nederweert (NB) "Mijl op Zeven" (De Peel peat bog, S.E. North Brabant)	Apr-15 Sept, 9-18, Sat-Sun 10-18	Moostdijk 8, 6035 RB Nederweert, 04951 - 41276

ZUYDER ZEE REGION

"Nieuw Land" Information Centre (Zuyder Zee works general; films)	10-17	Oostvaardersdijk, 8244 PH Lelystad, 03200 - 27799
IJsselmeer Polders Museum former island of Schokland (geology, biology, archeology)	Mon-Sat 9-17, Sun 10-18	Schokkeringweg, Ens, North East Pol- der, 05275 - 1396
Museum of Maritime Archeology	Mon-Sat 9-17, Sun 10-18	Vossemeerdijk 21, 8251 PM Ketel- haven, East Flevoland, 03210 - 3287
Zuyder Zee Museum (history of Zuyder Zee and environs)	Mon-Sat 10-17, Sun 12-17	Wierdijk 18, 1601 LA Enkhuizen, 02280 - 3844

N.B. The exhibition in Den Oever about the Afsluitdijk, referred to in the IDG Zuyder Zee/Lake IJssel Guide, was closed in 1978.

BOAT TRIPS/TOWNS

Amsterdam — through canals and harbour	throughout the year	Rederij P. Kooy, Oude Turfmarkt 0/125, 1012 GC Amsterdam, 020 - 233810; and others.
Rotterdam — through the port	throughout the year	Spido Havendienst, Willemskade 14, 3016 DK Rotterdam, 010 - 171911

OTHER BOAT TRIPS

(limited selection, further information from:
National Tourist Bureau, Bezuidenhoutseweg 2,
2594 AV The Hague, 070 - 814191)

Delta Region Grevelingen Lake, from Scharendijke	Mid May-Aug	ZWN, Grachtweg 23, 4301 KJ Zierik- zee, 01110 - 3751
Haringvliet, from Rotterdam	Mid June-Mid Aug	Spido, Willemsplein 20, 3016 DR Rotterdam, 010 - 135400
from Willemstad	Apr-Sept	Otter, Pr. Christinastraat 61, 4797 HP Willemstad, 01687 - 2814
Eastern Scheldt from Burgsluis	Mid May-Aug	ZWN, Grachtweg 23, 4301 KJ Zierik- zee, 01110 - 3751

PLACE AND INSTITUTION	OPENING TIMES	ADDRESS AND TELEPHONE NUMB.
Frisian Lakes		
from Drachten	Jul-Mid Aug	Kijlstra, De Tille 13, 9201 AH Drachten, 05120 - 12791
from Leeuwarden		Stad Dokkum, Tijnjekade 31, 8936 AB Leeuwarden, 05100 - 39290
from Sneek		Harder en van der Werf, 1e Oosterkade 6, 8605 AA Sneek, 05150 - 17314
Loosdrecht Lakes		
from Utrecht	Jun-Mid Aug	Rondvaartbedrijf Utrecht, Oudegracht t/o 85, 030 - 319377
from Loosdrecht	Mar-Oct	Wolfrat, Oud Loosdrechtsedijk 165, 1231 LV Loosdrecht, 02158 - 3309
Lake IJssel		
Urk-Enkhuizen	May-Sept	Eerste Urker Passagiers- en Vrachtdienst, Oslolaan 2, 8321 HE Urk, 05277 - 1320
Enkhuizen-Stavoren	May-Sept	Rederij NACO b.v., Leidsevaart 396, 2014 HM Haarlem, 023 - 319227

Addresses of organisations not mentioned above.

Amsterdam, Municipal Port Department	Havengebouw, De Ruyterkade 7, 1013 AA Amsterdam	020-221201
Central Bureau of Statistics CBS	Prinses Beatrixlaan 428, 2273 XZ Voorburg	070-694341
Department of Waterways, Delta Division, Information Department	van Veenlaan 1, 4301 NN Zierikzee	01110-2851
Government Service for Land and Water Use	Griffioenlaan 2, 3526 LA Utrecht	030-859111
The Hague, Municipal Information Centre	Groenmarkt 7, 2513 AL The Hague	070-624121
Ministry of Agriculture and Fisheries, Information Department	Bezuidenhoutseweg 73, 2594 AC The Hague	070-793911
Ministry of Culture, Recreation and Social Work	Steenvoordelaan 370, 2284 EH Rijswijk	070-949233
Ministry of Economic Affairs, Information Department	Bezuidenhoutseweg 151, 2594 AG The Hague	070-814111
Ministry of Housing and Physical Planning Information Department	van Alkemadelaan 85, 2597 AC The Hague	070-264201
Ministry of Public Health and Environmental Hygiene Information Department	Dr. Reijerstraat 8-12, P.O. Box 439, 2260 AK Leidschendam	070-209260
Ministry of Transport, Waterways and Communications Information Department	Plesmanweg 4, 2597 JG The Hague	070-747474
National Association for the Conservation of the Wadden Sea	Voorstraat 18, 8861 BK Harlingen	05178-5541
National Geological Service	Spaarne 17, 2011 CD Haarlem	023-319362
National Historic Buildings Conservation Service	Broederplein 41, 3703 CD Zeist	03404-28122
National Physical Planning Agency	Willem Witsenplein 6, 2596 UK The Hague	070-264201
National Water Supply Institute	Nieuwe Havenstraat 6, Voorburg	070-694251
Netherlands Railways, Educational Information Department	Morreelsepark 1, 3511 EP Utrecht	030-353630
Recreation Foundation	Statenplein 1, 2582 EW The Hague	070-500100
Rotterdam, Municipal Information Department	Coolsingel 40, 3011 AD Rotterdam	010-179111
Royal Netherlands Geographical Society, KNAG	Weteringschans 12, 1017 SG Amsterdam	020-924949
Royal Netherlands Tourist Association, ANWB	Wassenaarseweg 220, 2596 EC The Hague	070-264426
Rijnmond Authority, Information Department	Vasteland 96-104, P.O. Box 23073, 3001 KB Rotterdam	010-111320
Soil Mapping Foundation STI&OKA	Staringgebouw, Marijkeweg 11, 6709 PE Wageningen	08370-19100
South IJsselmeer Polders Board	Zuiderwagenplein 1, 8224 AC Lelystad	03200-26844
idem	Raadhuis, Kerkstraat 98, 1354 AA Almere	03240-10194
State Printing and Publishing House	Chr. Plantijnstraat, 2515 TZ The Hague	070-789911
Topographical Service	Westvest 9, 2611 AX Delft	015-120846
Utrecht, Municipal Information Department	Slachstraat 12, 3512 BC Utrecht	030-328511
IJsselmeer Polders Authority, Information Department	Zuiderwagenplein 2, 8224 AD Lelystad	03200-99111

IV – ABOUT THE IDG

Annual Report for 1980 and activities during the first half of 1981

An important event during the report year 1980 was the XXIV th Congress of the International Geographical Union held in September in Tokyo, where the IDG made its presence felt by means of an exhibition (the Netherlands ± Water), by giving out documentation material and supplying information to hundreds of delegates at the congress, and through the presentation by the Manager of the IDG Bureau of a paper in the section on "Geography and Education" with the title "Geography Textbooks and International Understanding". The paper drew attention to the fact that numerous inaccuracies about "other" countries were still to be found in geography teaching material. It is an impossible task, particularly for authors of geography textbooks for secondary schools, which cover dozens of countries, if not the whole world, to obtain relevant, accurate and up-to-date information about these countries. The service which national geographical centres, such as the ISEI *) and IDG, can offer is of great importance here. Both institutes can show that, since they began their activities, the treatment of the two countries in foreign schoolbooks has demonstrably improved. The paper therefore ends with a warm plea for the establishment of such centres in as many countries as possible.

As far as the Bureau's usual activities are concerned, mention may be made of replies to 1076 mainly written requests for information and/or documentation, received from 63 countries. As a result, the total number of countries with which the IDG has had contact since its foundation in 1964 has risen to 84. Proportionately, the number of requests from the three immediately neighbouring countries has declined somewhat, the number from the "remainder of Europe" has remained more or less the same, while the number of requests from outside Europe has increased.

In the first series there appeared during the second half of 1980 versions of the third edition of the "Compact Geography of the Netherlands" in Indonesian, Italian, Polish and Portuguese. This completes the issuing of this publication in twelve languages.

In the second series there appeared at the end of 1980 and the beginning of 1981 versions of the Guide to the Randstad in Dutch, German, French and English. This is a new publication which, in view of the large number of requests for information about this area, meets a definite need. Like the guides to the Zuyder Zee region and the South West Netherlands, the "Guide to the Randstad Holland" consists of a general section and a description of excursion routes.

In addition, the third, completely revised, edition of the Zuyder Zee/Lake IJssel Guide will appear at about the same time as this Bulletin.

The summaries of literature about the geography of the Netherlands in German, French and English have also been completely revised.

The contacts of the Dutch government with the People's Republic of Rumania, within the framework of the Cultural Accord between the two countries, led to the exchange of reports about the results of the study of each other's geography schoolbooks and atlases for secondary education. The visit to Japan also provided the opportunity for an exchange and study of each other's geography study material.

In Brussels the Commission of the European Communities (Directorate-General for Research, Science and Education) organised in November 1980 a second conference for representatives of Associations of Geography Teachers. During this conference a proposal originating from the IDG (put forward during the first conference in November 1979) was adopted proposing the annual publication of a European Bulletin for geography education.

*) International Society for Educational Information, Tokyo, Japan.

Aims and activities.

For those readers who are making the acquaintance of the IDG for the first time through the medium of this Bulletin there follows finally, a summary of the IDG's origins, aims and activities.

The Information and Documentation Centre for the Geography of the Netherlands is a non-profit making body, whose aim is to supply information and documentation about the geography of the Netherlands to institutions and bodies outside the Netherlands concerned with education, study and information, in the widest sense, about that country.

The idea of establishing such centres derived from a conference about the correction of geography school textbooks, held in Ireland in 1963 under the auspices of the Council of Europe. The Centre has been functioning since 21st September 1964. Under the pressure of circumstances (a parliamentary question about incorrect statements about the Netherlands in a foreign geography textbook) activities had to begin before a definitive form of organisation had been worked out. On 9th December 1969 the Centre became a foundation and, on 1st April 1971, the Bureau of the Centre, established in the Geography Department of the University of Utrecht, was able to begin operating. The necessary funds for the functioning of the Bureau derive from an annual subsidy of the Ministry of Education and Science; publications, exhibitions, conferences etc. are largely financed by the Ministry of Foreign Affairs.

The work done so far can be divided into a number of categories:

- replying to letters from all parts of the World. The letters contain a great variety of requests for information about the geography of the Netherlands, as well as for the supply of visual material, for addresses or assistance in the preparation of field excursions.
- the reception of foreign geographers preparing, for example, a publication about the geography of the Netherlands or a field excursion. The Bureau offers, inter alia, the possibility of consulting a bibliography of foreign language publications about the geography of the Netherlands and a modest collection of photographs.
- the compilation of information in different languages (brochures, guides, wall map, bulletin; see page 54), in collaboration with the Ministry of Foreign Affairs.
- the compilation of a bibliography of foreign language publications, principally published since 1945, about the geography of the Netherlands. Lists have been compiled for distribution of the titles in the English, French and German languages contained in the bibliography. There is also a list of literature in the Dutch language. In addition, a card index has been made of all the visual material (maps, photographs, films etc.) illustrating the geography of the Netherlands.
- the organisation of bilateral conferences on the mutual revision of geography teaching material.
- attempting to publicise the Centre's existence and mode of operation among as wide as possible a circle of foreign geographers.

Appendix 1

BIBLIOGRAPHY

Recent publications on the geography of the Netherlands.

Amsterdam; Statistics of the port (annual)
Municipal Port Authority of Amsterdam

Bartels, C.P.A. and J.J. van Duijn —
Questions relating to future regional policy
in: *Planning and Development in the Netherlands*, vol. XII, no. 2 1980, p. 83-102

Berggren, H. —
The construction of the storm surge barrier in the Eastern Scheldt
in: *Rotterdam/Europoort/Delta*, (1980) no. 6, p. 39-47.

Central Bureau of Statistics

- *Bevolking der gemeenten van Nederland op 1 januari 1981*; 88 pp., Price: Hfl. 10,—
(Population of the municipalities of the Netherlands, 1st January 1981) *
 - *Regionaal Statistisch Zakboek 1980*; 240 pp., price: Hfl. 25,—
(Regional Statistical Review, 1980)
 - *Statistical Yearbook of the Netherlands 1980*; 370 pp., price Hfl. 57,50 *
 - *Statistisch Zakboek 1981*; 388 pp., price Hfl. 17,50 *
 - *80 Jaar Statistiek van Nederland*; 308 pp., price: Hfl. 30,—
(80 Years of Statistics in the Netherlands), 1979
- The Hague, Staatsuitgeverij.

* annually published.

Constandse, A.K.

Planning and creation of an environment; experiences in the IJsselmeerpolders.
Lelystad, 1976
Published on the occasion of the UN Conference on Human Settlements, Vancouver, 1976.
Brief description of the Zuiderzee scheme, emphasizing the physical planning of the settlements in the polders,
and the shifts of opinion about this.

Environmental Protection

Special issue of "Planning and Development in the Netherlands"; vol. XI no. 2, 1979
Van Gorcum Publ., Assen.

Articles:

- Standards for environmental protection; p. 89-108
- Indicative multi-year programmes; p. 109-127
- Environmental aspects in physical planning; p. 128-145
- The new Netherlands airport zoning act; p. 146-160
- Managing the natural environment in agricultural areas; p. 161-178
- Public opinion and environment 1970-1975; p. 179-185

Evendijk, J.E. —

Issuing alerts to reduce the effects of air pollution episodes in the Netherlands
in: *Land & Water International*, 41/1980, p. 12-21

Griffiths, R.T. —

The Economy and Politics of the Netherlands since 1945
Martinus Nijhoff, The Hague, 1980, 311 pp.

Kemper, N.J. and M. de Smidt —

Foreign manufacturing establishments in the Netherlands
in: *Tijdschrift voor Economische en Sociale Geografie (TESG)*, vol. 71 (1980), no. 1, p. 21-40

Knaap, G.A. van der —

Population growth and urban systems development; a case study
Martinus Nijhoff, The Hague, 1980, 237 pp.

Van Lier, H.N. and C. Bijkerk —

Outdoor recreation in the Netherlands, I
in: *Landscape Planning*, Amsterdam, vol. 7, no. 3, Oct. 1980, p. 313-328

Van Lier, H.N. —

Idem, part II,
in: idem, p. 329-343

Luchttafel van Nederland (Air picture Atlas of the Netherlands)

185 Photographs and Maps, partly in multicolour print, text in Dutch
(compiled under the auspices of the Royal Dutch Geographical Society)
Bussum, Romen, 1978. Price Hfl. 29,50. ISBN 90 228 2528 0

Ministry of Agriculture and Fisheries

- Aspects of Dutch agriculture; 56 pp.
 - Dutch agriculture in facts and figures; 15 pp.
- The Hague, 1979.

Ministry of Foreign Affairs

The Kingdom of the Netherlands; facts and figures.
This publication comprises a.o. the following parts:

- Country and people (geography, population)
 - The Economy
 - Agriculture and Fisheries
 - Transport and Communications
 - Health and Environmental Protection
 - Housing and Physical Planning
 - Public Works
- The Hague, 1978/1979.

Ministry of Housing and Physical Planning, The Hague

- Summary of the Report on urbanisation in the Netherlands, *) 1976, 14 pp.
- Summary of the Rural Areas Report, *) 1978, 36 pp.

Ministry of Transport and Public Works, The Hague

- The Delta project; 1977, 15 pp.
- Room at last; the IJsselmeerpolders described and illustrated; 1976, 48 pp.
- Transport policy and the development of the transportation network in the Netherlands; 24 p.

Netherlands Inter-University Demographic Institute/Netherlands Demographic Society -

Selected annotated bibliography of population studies in the Netherlands, 1980
Voorburg, 1981

OECD Economic Surveys; NETHERLANDS

Paris, OECD, March 1981, 60 pp.

Ottens, H.F.L. -

Spatial development in the Green Heart of the Randstad:
policies versus theoretical and empirical evidence
Tijdschrift voor Economische en Sociale Geografie (T.E.S.G.), 70 (1979) no. 3, pp. 130-143

Pinder, D. -

The Netherlands (Studies in industrial geography)
London, Hutchinson, 1978, 190 pp. ISBN 0 7129 0686 X

Pinder, D.A. -

Community attitude as a limiting factor in port growth: the case of Rotterdam
in: Cityport industrialization and regional development, spatial analysis and planning strategies, chapter 13, p. 181-199;
edited by B.S. Hoyle and D.A. Pinder; Pergamon Press, 1981, Oxford etc.

Polman, G.K.R. -

The Oostvaardersplassen, a waterfowl reserve in the lately reclaimed Flevoland Polder
in: Land & Water International, 44/1981, p. 19-24

Rotterdam Port Authority -

- Review Map (1:80.000) of the Rotterdam/Europoort port area
- Statistical Review, annually published, 36 pp.

Rijksdienst voor IJsselmeerpolders, Lelystad **)

Flevoland, Facts and Figures (annually), 36 pp.

Saeijs, H.L.F. -

Ecological impact of the Delta Project in the Netherlands
in: Land + Water International (NEDECO, P.O.B. 80508, 2508 GM The Hague)
- (1979) no. 40, p. 20-34, part 1;
- (1980) no. 42, p. 9-16, part 2

Siegers, J.J. and M.N. Stijnenbosch -

A regional analysis of the distribution of the number of employees in the Netherlands by industrial sectors and occupational groups, 1973
in: Tijdschrift voor Economische en Sociale Geografie (TESG), vol. 71 (1980) no. 5, p. 307-313

*) for the other reports and structure schemes in the field of physical planning, see Section III, 3 of this Bulletin.

**) a complete list of publications issued by the IJsselmeer Polders Development Authority is obtainable from the Authority's Information Department (see list of addresses on p. 49).

Smidt, M. de -

Planning problems of the Greenheart Metropolis; the Randstad as the main urban field in the Netherlands.
Paper presented at the 75th anniversary Meeting of the American Association of Geographers,
Philadelphia, April 1979.

Tamsma, R. -

The Netherlands in one hundred maps.
Amsterdam, Royal Dutch Geographical Society, 1977.
Special issue T.E.S.G. (obtainable from IDG)

Tamsma, R.

Three decades of regional policy in the Netherlands 1950-1980
Geography Department of the State University Groningen, 1980, 98 pp.

Thomas, P.R. -

Changing pattern of population growth in the Netherlands
in: Geography, vol. 65, Part 3, July 1980 pp. 224-229.

Whysall, P.T. -

Regional Economic Planning in the Netherlands
in: Town and Country Planning; (1979) no. V, pp. 263-267.

Publications IDG/Ministry of Foreign Affairs, Utrecht/The Hague

- Compact Geography of the Netherlands; 3rd. ed., 1979, 44 pp.
- Pictorial Atlas of the Netherlands; 1977, 40 pp.
- Wall Map of the Netherlands, scale 1:325,000.
- These publications are obtainable in the following language versions:
Dutch - German - English - French - Danish - Spanish - Portuguese - Italian - Polish - Russian -
Indonesian - Japanese - Arabic.
- IDG-Bulletin (annually)
Language versions: Dutch - German - English - French - Spanish.
- Randstad Holland; 1980, 72 pp.
- The South-West Netherlands; 2nd. ed., 1977, 60 pp.
- Zuyderzee/Lake IJssel; 3rd. ed., 1981, 72 pp.
Language versions of these publications (at the same time excursion guides):
Dutch - German - English - French.
- Agriculture in the Netherlands: leading article in Bulletin, 1977-78 (pp. 5-29).
- Industry in the Netherlands: leading article in Bulletin, 1976-77 (pp. 5-22).
- Netherlands $\pm$ Water: leading article in Bulletin, 1978-79 (pp. 5-56).
- Physical planning in the Netherlands: leading article in Bulletin 1979-80 (pp. 5-34).

The geography of the Netherlands in pictures

Series of 36 colour transparencies with explanatory text; 1981
Obtainable from IDG, Utrecht; price Hfl. 40,-.

Periodicals

- T.E.S.G. (Tijdschrift voor Economische en Sociale Geografie; Journal of Economic and Social Geography).
6x per year; partly in English.
Subscription rate: Hfl. 87,-.
Royal Dutch Geographical Society (KNAG), Weteringschans 12, 1017 SG Amsterdam.
- Rotterdam-Europoort-Delta
4x per year; in English.
Havenbedrijf der Gemeente Rotterdam, address: Europoint III, Post Box 6622, Rotterdam.

Atlases

- Meulenhof-Educatief b.v.
Schoolatlas for secondary and further education,
Amsterdam, 1978. price: Hfl. 42,50. ISBN 90 280 0794 6.
- Wolters-Noordhoff b.v.
De Grote Bosatlas; 49th rev. ed., 196 pp.
Groningen, 1981, price: Hfl. 59,50. ISBN 90 01 12100 4.

Topographical Maps

Topografische Dienst, Westvest 9, Delft.

- Scale: 1:10.000
only in black-and-white; price: Hfl. 13,00
- Scale 1:25.000 and 1:50.000
in black-and-white, price Hfl. 5,00
in multi-colour print, price: Hfl. 8,80
See page 57

Transparencies

FIBO-Beeldonderwijs, Zeist: Series of colour-transparencies (textbooks in Dutch)

- De Zuiderzeewerken (20)
 - Deltawerken (31)
 - Waddenzee en Waddenland (Wadden Sea Area, 48)
 - De Randstad Holland (40)
 - Rotterdam (25)
 - Amsterdam (26)
 - Het Polderland (20)
 - Lange de grote rivieren (the big rivers; 20)
 - De kustduinen (the dunes; 20)
 - Zuid-Limburg (20)
 - De kust (the coast; 60)
 - Laag-Nederland (Low-Netherlands; 60)
 - Onze waterwegen (waterways; 60)
 - Ons drinkwater (our drinking water; 15)
- The prices vary between Hfl. 20,- and Hfl. 60,-
For copyright and orders: FIBO-beeldonderwijs, Utrechtseweg 66-68, Zeist.

IDG, Utrecht

The geography of the Netherlands in pictures
Series of 36 colour transparencies with explanatory text; 1981
Obtainable from IDG, Utrecht; price Hfl. 40,-.

Meulenhoff-Educatief Amsterdam

- Series of colour-transparencies (aerial photographs) accompanying the textbook "De Geo Geordend",
III, 200 transparencies; price: Hfl. 243,25.
Textbook (in Dutch): price: Hfl. 32,25.

Polyvisie, colour slide series:

- What is happening to the Wadden Sea? (72 slides)
 - The water supply of the Netherlands (44)
 - Threatened landscapes (Tape slide presentation, 96 slides with tape cassette)
 - The energy supply of the Netherlands (36)
 - Sea becomes land (26)
 - Southern Flevoland (12)
 - The enclosing dam (12)
 - Dike construction (12)
 - Reclamation (12)
 - The Dutch Coast (31)
 - Our modern ports (24)
 - Europoort (12)
 - Rotterdam, gateway to Europe (12)
 - The blast furnaces (12)
 - Netherlands Railways (12)
- Prices vary from Hfl. 11,50 to Hfl. 130,00, depending upon the number of slides.
For copyright and orders: Polyvisie, 's-Gravelandseweg 78a, Hilversum.

Transparencies for the overhead-projector

IVAC, Brussels.

- Transparencies for the overhead-projector, series no. 4005,
comprising the following parts:
- 1. Land uit zee (land reclamation, 5 transparencies)
- 2. Nederland: bevolkingsexplosie (growth of population; 4)
- 3. Tot voor 30 jaar overwegend een landbouwwild (agricultural economy; 5)
- 4. Groeiende industriestaat sinds WO-II (industry; 5).

Wall Maps

Van Goor Zonen, P.O.Box 70707, Amsterdam

- Staatkundige kaart van Nederland (The Netherlands; provinces, with blank work map on the reverse side);
1 : 275,000. Price: Hfl. 184,25

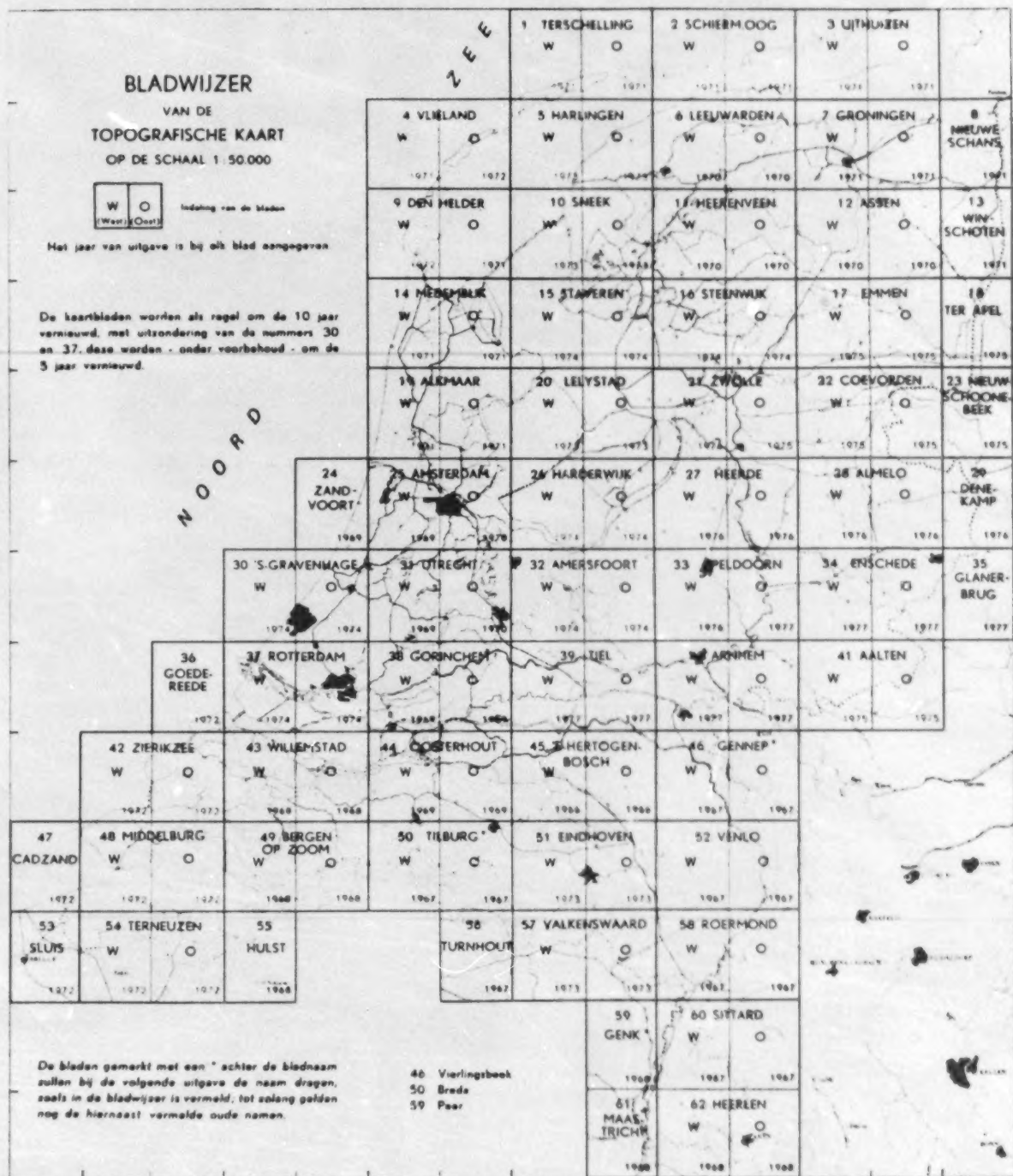
IDG/Ministry of Foreign Affairs

- Wall Map of the Netherlands, 1 : 325,000 (types of landscape)

Wolters-Noordhoff, P.O.Box 58, Groningen

- The Netherlands in European Space, 1 : 750,000, ISBN 9001 96081 2; Hfl. 150,-
- The Netherlands - relief, 1 : 300,000, ISBN 9001 96083 9; Hfl. 150,-
- The Netherlands - land use, 1 : 300,000, ISBN 9001 96082 0; Hfl. 150,-
- The Randstad Holland, 1 : 115,000, ISBN 9001 96084 7; Hfl. 150,-

Appendix 2



Topografische Dienst Delft

Uitgave 1978

fig. 19 - Sheet index to topographic maps.

Each of the lettered sections is a sheet in the 1:50,000 map series; each of these sections covers 4 sheets of the 1:25,000 series. The 1:50,000 map sheets are also available from the Topografische Dienst as "Waterstaat" (Water Contr.) maps, Geological maps (not yet complete) and Soil maps (not yet complete).